An Investigation of Current Rural Household Furniture in East Hebei (Jidong) Province, China

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Abstract

This study presents a multifaceted original contribution to knowledge by employing a unique methodological framework, comprehensive data collection, and the innovative application of lifestyle theory to the study of rural household furniture in Jidong Province, China. Departing from conventional mixed-method and purely ethnographic approaches, this research integrates qualitative methods, including open-ended interviews, participatory observations, and photographic analyses, with quantitative structured questionnaires. This methodological innovation facilitates a holistic exploration of both the historical evolution and contemporary realities of rural furniture, addressing gaps in prior research.

A key contribution is the systematic documentation and classification of traditional rural furniture, identifying nine distinct types based on size, usage, decorative features, and manufacturing techniques. This archival effort preserves cultural heritage while establishing a foundation for future comparative studies. Additionally, the application of lifestyle theory provides novel insights into how shifts in rural lifestyles influence furniture usage and preferences, broadening the scope of previous research that often focused on individual furniture pieces without considering socio-cultural dynamics.

Another significant finding is the classification of rural household yard layouts, including pre-earthquake yards, contemporary residential yards, and a newly identified functional-type yard, which reflects adaptive responses to socio-economic transformations. This classification enhances the understanding of spatial arrangements in rural households. Moreover, the study proposes practical design principles for improving rural furniture, offering specific, empirically informed recommendations tailored to the actual needs of rural residents.

In summary, this research advances academic discourse on rural household furniture in Jidong Province through methodological innovation, extensive documentation, application of lifestyle theory, novel yard classifications, and practical design principles. These contributions not only enhance scholarly understanding but also provide tangible solutions for improving rural living conditions.

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Glossary

Term	Definition
Bedroom Seating	Refers to a chair or sofa that is placed in a bedroom in a Type A or Type B house (has a fixed position and generally cannot be moved).
CIKN	China Knowledge Network - A database platform for academic resources in China, providing access to journals, dissertations, and other documents.
Common Furniture	Types of furniture commonly found in both types of houses. For example, a kang table is used in both - Type A Houses and Type B Houses.
EVA (Foam Cushion)	A material made from ethylene-vinyl acetate copolymer, known for its softness, lightweight properties, and cushioning capabilities, often used in furniture cushions to enhance comfort.
HEPA Filters	High-efficiency air filtration devices capable of capturing particles as small as 0.3 microns with 99.97% efficiency, improving air quality.
Household Production; Home-Based Production	Refers to commercial, tradable production activities conducted by villagers at home or in their courtyards. In this research, it includes village shops, mahjong parlours, and processing factories.
Kang	Kang is constructed of bricks and stones, positioned in the inner room, serving a functioning similarly to a modern bed.
KJD	Kexue Jikan Database - A database of Chinese scientific and technical journal literature, offering resources such as research papers, reports, and academic journals.
MDF	Medium-Density Fibreboard - A board material made by compressing wood fibres and resin, featuring a smooth and flat surface, suitable for furniture manufacturing and decoration.
New Cupboard	A kitchen cupboard made by local carpenters is used for storing kitchenware.
Old Cupboard (Traditional Cupboard)	A detachable cupboard purchased by villagers from the market, made from ordinary board materials and used for storing kitchenware.
PE	Polyethylene - Non-toxic and environmentally friendly plastic material commonly used in furniture such as chairs are characterized by good strength, durability, and corrosion resistance.
Plain Villages	Villages are located in plain areas, characterized by flat and relatively low-lying land with minimal undulations. Other types of villages include mountainous villages, hilly villages, river valley villages, lake region villages, coastal villages, plateau villages, forest villages, desert villages, and island villages.

SCIELO	A platform that primarily indexes academic journals from Latin America, the Caribbean, Portugal, and Spain.
Sitting Furniture	This refers to small stools in the home that are not fixed in position, are easy to move, and are generally placed in the halls of Type A houses and in the living rooms of Type B houses, such as plastic stools, iron ring stools, and square wooden stools (wooden benches).
Stove	Stove is located in the hall and is used for cooking and also heats the kang.
Tableware	Tableware refers to the utensils and appliances used to ingest food, including knives, forks, bowls, plates, and pots.
Type A Houses	The main living areas of Type A Yards, include the main hall and two inner rooms.
Type A Yards	Single-story, single-entry yards constructed immediately after an earthquake.
Type B Houses	The main living areas of Type B Yards, include bedrooms, living rooms, kitchens, and other spaces.
Type B Yards	Single-story, multi-entry yards renovated or rebuilt in the past 10 to 15 years.
The altar table ("Heaven and Earth table", “Offering tables”)	The altar table is centrally located in the hall for dining or placing items, and it is used during weddings as the Heaven and Earth table.
The kang cabinet	The kang cabinet is used for storage and is placed on the kang.
WOS	Web of Science - A leading global academic database covering multiple fields, including natural and social sciences.
Square wooden stools (wooden benches)	Square wooden stools also known as wooden benches, are the favourite sitting furniture of Jidong villagers and can be placed in every space of the house.
Yard	The entire rural residential courtyard, including the main house, side rooms, toilets, planting areas, and other sections, all enclosed by walls to form a single compound.

1 Introduction and Background

1.1 Introduction

With the trend of new rural construction, the living standards in rural areas of China continue to improve, and the demand for furniture from Chinese rural residents increases (National Development and Reform Commission, 2023). However, for a long time, the Chinese furniture market has focused on the needs of cities and disregarded the countryside (Sun, 2022). There is therefore a lack of provision which meets the particular requirements of rural residents. This raises a number of areas worthy of consideration and study.

Firstly, a mismatch exists between the available furniture and the needs of rural families (Wang and Tang, 2023). Much of the household furniture supplied to villagers in the rural market is the same as that in the city, and some furniture is even sold directly to the villagers at a discount price from obsolete furniture stocks in the city (Sun, 2022).

Secondly, rural areas possess unique lifestyles; however, the influence of these distinctive lifestyles on furniture has not been recognized by designers (Sun, 2022). In daily life, unlike the perceived privacy and loneliness of Chinese urban families, rural communities attach great importance to holding traditional festivals and maintaining their customs, and the relationship between neighbours is very close (Nong, 2022). In other words, in rural areas, it is common to celebrate festivals and hold ceremonies together (weddings and funerals), entertain relatives and friends at home, visit neighbours daily, and talk about family affairs. In addition, the rural economy, driven by national policies, has transitioned from communities primarily relying on

agriculture to become semi-agricultural or non-agricultural modern villages, and home-based production has also become prevalent in rural areas (Yin *et al.*, 2020). From the above two perspectives, these unique rural lifestyles will inevitably create new demands for currently used furniture; however, these new demands have not yet been thoroughly studied.

Finally, in rural China, traditional furniture can be easily found (Appiah-Kubi *et al.*, 2021). Ma (1995) stated that rural furniture in China is the prototype of all furniture, and Gao Yiqiang, the founder of the 'Ri Yong Zhi Dao' brand, mentioned that studying rural furniture can reveal historical changes in Chinese furniture since the 1970s (Wenzhou Fashion Intelligent Manufacturing Design Company, 2020). Compared to urban residents in China, rural areas, due to their inherent closed and traditional nature, are less affected by globalization. Many villages still maintain a simple way of life, with lifestyles that are relatively outdated lifestyles and a slow rate of furniture replacement, which allows for the preservation of some traditional furniture. Therefore, in this research, attention is also paid to the traditional furniture present in rural areas of East Hebei.

1.2 Type and Scope of Research

1.2.1 Type of Research

Scholars studying Chinese rural furniture typically classify and investigate it based on regional styles, as regional characteristics have been the most significant factors in the historical development of rural furniture in China. With a total land area of 9.44 million square kilometres, rural areas constitute 94.7% of the country, each with distinct geological and geographical features (National Bureau of Statistics of China, 2021; Ju, 2023). Variances in terrain result in diverse climatic conditions, ranging from the cold Northeast to the warm North China Plain, the subtropical Southwest,

and the tropical South, impacting factors such as rainfall, rivers, and vegetation. These diverse factors contribute to significant variations in the customs and lifestyles of rural villagers across China, indirectly influencing the furniture styles in different regions.

Ma (1995), in his work, classified Chinese rural furniture based on the Yangtze River Basin into southern styles such as "Su-made" furniture (centred around Suzhou), "Yong-made " furniture (in the Ningbo region), "Guang-made " furniture (in Guangdong and Guangxi), "Chuan-made " furniture (in the Sichuan hinterland), and northern styles including "Jin-made " furniture (in Shanxi), "Ji-made " furniture (in Hebei, including Beijing and Tianjin), "Lu-made " furniture (in Shandong), "Shan-made " furniture (in Shaanxi). These styles, based on regional cultural characteristics, have developed distinct furniture styles under the principle of craftsmanship, identifiable independently.

Subsequently, Liu *et al.* (2022) not only highlighted the north-south differences, inland-coastal differences, and variations between economically developed and remote areas of Chinese rural furniture but also used analogies to compare Ming Dynasty furniture styles like "Su-made," "Jin-made," "Guang-made" with "American rural furniture," demonstrating the regional characteristics and local sourcing of rural furniture.

Moreover, scholars such as Gao (2021), Shi (2023), and Chen (2022) also continued the regional classification of furniture, providing design and historical discussions on styles like "Jin-made," "Su-made," and "Guang-made." Therefore, this thesis selects regional rural furniture as its research type, with a focus on the "Ji-made " furniture style from the eastern region of Hebei Province.

1.2.2 Scope of Research

The primary focus is on current conditions, while the geographical scope is constrained to rural areas in Eastern Hebei, commonly known as "Jidong" (Peng, 2020). The main scope of this research is furniture, furniture users, and the spatial arrangement of furniture.

This research emphasizes the investigation of the current status of furniture. With the continuous evolution of society, people's needs are changing, leading to the constant evolution of furniture. For rural residents, the furniture commonly used in urban areas is often unsuitable for their lifestyle, and traditional rural furniture may also not meet their needs. Therefore, it is essential for designers to understand the issues arising with current rural furniture and address the furniture needs of residents living in rural areas.

The geographic research scope of this research centres on the "Jidong" region. Bounded by the Bohai Sea to the south and the Yanshan Mountains to the north, this area predominantly exhibits two topographical features: mountains and plains. Geographically, the scope covers 21 counties and two cities, Tangshan and Qinhuangdao, as well as parts of Chengde (Figure 1.1). Positioned within the mid-latitude zone, Jidong experiences a warm temperate continental monsoon climate, characterized by distinct seasons, ample sunlight, and abundant water sources, fostering favourable conditions for plant growth. The region's rich timber resources facilitate easy sourcing for rural artisan. Moreover, the Luan River, the second-largest river in North China, traverses the Jidong region, forming the Luan River water system, which boasts abundant water resources. Since the Palaeolithic Age, this

region has nurtured agricultural civilizations along its riverbanks, with a longstanding history of furniture craftsmanship.



Figure 1.1 Jidong region (Adapted from SlideTeam, 2022; Britannica, 2022).

This research examines furniture, its spatial arrangement, and its users. Furniture is the primary focus of this research, encompassing household furniture used indoors, such as bedroom, living room, kitchen, and study furniture, as well as traditional furniture used during specific indoor events, such as (weddings and traditional festivals). Moreover, this research explores the close relationship between furniture and interior space configuration. The structure and characteristics of architectural space largely determine the layout and functional zoning of furniture, while the manufacturing methods and design styles of furniture, in turn, shape and influence the character and ambiance of the interior space. Therefore, an in-depth study of interior home spaces is crucial for optimizing furniture design, enhancing spatial functionality, and improving the overall living experience.

Additionally, in this research, villagers who hold rural household registrations and have lived in rural areas long-term are selected as the primary research participants. Some residents who hold rural household registrations but have lived in urban areas for extended periods have partially or fully integrated into urban life, resulting in needs that differ significantly from those of true rural residents; therefore, they are not the primary focus of this research. Furthermore, in terms of family composition, furniture users can be categorized as either family members or guests. Family members denote relatives, including both direct and collateral relatives, whereas guests encompass visitors or temporary residents. In this research, the perspectives of both the hosts and guests are considered.

In summary, the scope of this research encompasses the current usage of indoor household furniture in rural Jidong. This includes bedroom, living room, kitchen, and study furniture, as well as traditional furniture utilized during specific indoor events such as weddings and traditional festivals. Thus, the overall scope of the study forms the basis of the thesis title: " An Investigation of current rural household furniture in East Hebei (Jidong) Province, China".

1.3 Why Study the Rural Furniture in Jidong?

Rural residents in the Jidong region have a growing demand for household furniture, driven by economic development and improved living standards (Shao, 2023). Located near Beijing and Tianjin, this area is experiencing rapid economic development. Influenced by these two cities, the living standards of rural villagers have continuously improved, leading to an increasing demand for rural furniture. Furthermore, the North China Plain is predominantly composed of plain villages, with the Jidong countryside located in the northeastern part of the plain, primarily consisting of such villages (Wei, 2020). Therefore, studying the furniture needs of

villagers in Eastern Hebei provides valuable insight into the broader demands of rural residents across the North China Plain.

The rural household furniture data in the Jidong area present significant gaps, offering an opportunity to contribute to filling some of these voids. Located in the eastern part of Hebei Province, the area is susceptible to frequent seismic activity due to its position within a continental fault zone, resulting in widespread damage to historical artifacts and paper-based documents (Gang, 1983). In 1983, Jiang noted in his article that the Beijing area, adjacent to Jidong, experienced over 222 earthquakes, greatly affecting the rural villages in the region as well. Qian (1986) explicitly recorded in his report literature the damage to libraries during the 7.8 magnitude Tangshan earthquake on July 28, 1976, at 3:42 AM: " *The three-story reinforced concrete structure of the Tangshan Mining Institute Library slid westward, as if the ground swallowed a layer, reducing the original three-story building by one floor.*" This earthquake caused substantial destruction of precious cultural relics in the Jidong region, leaving little materials related to local furniture. Consequently, it is essential to analyse and classify the existing traditional and modern furniture in the sample villages for this research.

The researcher's hometown is located in the Jidong region, making it convenient for fieldwork in the rural areas. Wu (1982) noted that language barriers can hinder communication between researchers and participants, potentially affecting the research outcomes. In this research, the researcher is a city dweller from Jidong; even without long-term residence in rural villages, the language used in urban and rural contexts is similar, which does not impact the investigation's outcomes. Furthermore, some scholars have long believed that only fieldwork involving representative ethnic groups or regions can uncover cultural differences (Gupta *et al*., 1998). However, some scholars, like Huang (2011), proposed a spatial rethinking of the concept of

fieldwork, suggesting that fieldwork in one's hometown or urban setting can be equally valuable. This notion is echoed by the renowned Chinese sociologist Fei (1998), who stated that 'everywhere is the field' in the human world. Similarly, Brazilian anthropologist Peirano (1998) contends that wherever there are differences or alterity, there exists the field of anthropology. Therefore, the researcher is keen to study their hometown and contribute to the development of rural areas in Jidong.

1.4 Research Questions

This research adopts an anthropological field study to examine the current state of household furniture in Jidong's rural areas. Through a literature review, two areas of exploration have been identified. The first focus is on documenting and categorizing traditional furniture found in the surveyed villages. Therefore, the first question is: **What traditional furniture was discovered in the villages surveyed?**

Secondly, regarding the currently used furniture in rural Jidong, a review of the literature indicates that existing furniture in this region exhibits various design limitations and functional demands, yet these issues have not received sufficient attention. Furthermore, investigating these issues requires the use of lifestyle theory to consider how different lifestyles in Jidong affect furniture use. Thus, the second question is: **What problems and needs do residents have regarding furniture in the context of the lifestyle of rural households in eastern Hebei?** After understanding these problems and demands, it is essential to propose corresponding design principles. Therefore, the third question focuses on **What improvement principles can be proposed for the design and usage of furniture in rural households of eastern Hebei, considering their current lifestyle?**

1.5 Aims and Objectives

This research aims to comprehensively understand the current situation of household furniture in Jidong rural areas, to explore the issues related to the currently used furniture in these villages, and to propose corresponding solutions. Additionally, it seeks to conduct an in-depth study of the traditional furniture found in the selected villages, contributing to the protection and transmission of traditional furniture culture.

The specific objectives are as follows:

Objective One: To expand existing research on traditional furniture in rural Eastern Hebei: To collect existing data related to traditional furniture in the studied villages in order to compensate for the loss of certain materials due to natural disasters.

Objective Two: To establish a current demand profile for the currently used furniture in rural Eastern Hebei: To analyse its spatial context (including yard layout and spatial arrangement), identifying furniture types and layouts, assessing usage patterns, and documenting existing problems and needs.

Objective Three: To provide develop design principles for addressing issues with furniture use improving furniture usability in rural Eastern Hebei: To propose solutions to the identified problems, considering factors such as price, form, function, materials, and sustainability.

This research contributes to the preservation of rural furniture traditions while informing sustainable furniture design strategies in China.

1.6 Thesis Layout

This thesis is divided into nine chapters. Appendix 6 presents a framework diagram illustrating the relationships among the research questions, research objectives, research methodology (including steps of fieldwork), and thesis chapters. The first chapter introduces the background, type, and scope of this research, as well as the reasons for studying this topic, the research questions, objectives, and aims.

The second chapter consists of a literature review. The first part discusses the conceptual definitions of the keywords related to the topic. The second part provides a literature review on the type of regional rural household furniture, focusing on the directions, methods, and classification approaches relevant to this research. The third part outlines the theoretical framework of lifestyle in the context of current rural furniture. The fourth part summarises the research framework for studying regional rural household furniture. The fifth part organizes the literature concerning the Jidong region, including aspects of the environment, traditional furniture, and usage furniture.

The third chapter outlines the methodological framework, which is based on the interpretivist research paradigm and employs a mixed-methods approach in anthropological fieldwork. Additionally, this chapter introduces the five phases of data collection designed to address the research questions. The research utilized four primary data collection methods: field notes, interviews, observations, and questionnaires. Chapters four through seven report the findings and analysis of these five phases. The eighth chapter organizes design strategies based on the findings and analyses.

The ninth chapter consists of the discussion and conclusion. It first discusses the relationship between the research questions and objectives of this research with the structure of the thesis and the data collection steps, as well as compares the literature on other rural furniture with that of Jidong. It then describes the contributions of this research and the scope for further research.

2 Literature Review

2.1 Introduction

In this chapter, the researcher aims to explore the literature related to rural household furniture, examining how other researchers have studied the current state of regional rural household furniture and organizing the relevant literature about Jidong rural furniture.

Section 2.2 reviews several concepts related to household furniture, including the concept of household furniture itself, the differences between urban and rural household furniture in China, as well as traditional and currently used furniture in rural China.

Section 2.3 presents the current state of literature research on regional rural household furniture according to the type of this thesis, primarily analysing it from three aspects: research direction, research methods, and classification.

Section 2.4 outlines the theoretical framework of lifestyle in the context of current rural furniture, redefining the concept, components, and content of rural household lifestyles. This provides a theoretical foundation for constructing the research framework of the current state of regional rural household furniture in Section 2.5.

Section 2.5 constructs the research framework for the current state of regional rural household furniture, guiding the overall research of the study.

Section 2.6 reviews the relevant literature on Jidong rural furniture, identifying shortcomings in the research related to the environment, traditional furniture, and currently used furniture.

Section 2.7 highlights the gaps in the literature, refining the research questions of this research and providing guidance for subsequent research design.

2.2 Household Furniture

2.2.1 Household Furniture

Household furniture is a subclass of furniture that defines a space specifically for various furniture used in family life. Generally, household furniture refers to the furniture used in different functional areas of family life, including the living room, bedroom, dining room, kitchen, study. These furniture pieces are typically used in daily life to provide a comfortable and convenient environment, including but not limited to sofas, beds, dining tables and chairs, wardrobes, bookshelves, TV cabinets, coffee tables, and desk lamps. In this research, these essential household furniture pieces are the primary focus of discussion.

Furthermore, when studying household furniture among South American indigenous peoples, Bennett (1949) not only discussed the items inside residential houses and their purposes but also explored specific types of dwelling which included activities such as home working where the use of ‘furniture’ overlapped with the category of household furniture. For example, he examined storage lofts, special storage platforms, wall niches, shelves, hooks, pegs, and bins or compartments within the domestic environment. Subsequently, researchers such as Zhou *et al.* (2023), as well as Zhu (2024), have conducted analyses on the demand for furniture within the overall

spatial environment. Therefore, in this research, it is important to examine not only the household furniture itself in the household space, but also the environment in which the furniture is located, including the type and layout of the houses.

2.2.2 Chinese Urban and Rural Household Furniture

China's unique economic policies have led to the formation of two styles of household furniture: urban household furniture and rural household furniture (Tang, 2021). Early on, policies such as "*let some people get rich first*" supported rapid urban economic development, while rural economic development lagged (Chen *et al.*, 2023). As a result, the income and living standards of urban residents in China have approached those of major international cities like London and New York. Urban household furniture has also become more internationalized, emphasizing functionality, intelligence, and design. In contrast, the rural economy primarily relies on agriculture or handicrafts, resulting in lower income levels and a focus on meeting basic survival needs, such as food, clothing, and housing. However, in recent years, with the development of the rural economy and government support, residents in rural areas have also become more affluent and have begun purchasing furniture to improve their quality of life.

Chinese urban household furniture is a new concept introduced during the Republic of China period, in contrast to the traditional rural household furniture passed down through generations (Baidu Baike, 2019). Currently, urban household furniture in China refers to the furniture used within urban household spaces, characterized by modern design that reflects the demands of urban residents for fashion, practicality, and comfort.

Chinese rural household furniture typically refers to the furniture used within rural household spaces. In 1995, Ma defined Chinese rural household furniture as "*standardized furniture that embodies the life philosophy of rural people, conforms to their living habits, and is consistent with traditional Chinese aesthetic tastes.*" Subsequently, Liu *et al.* (2022), Nong (2022), and Guo *et al.* (2023) built upon this theoretical foundation to further define Chinese rural household furniture. They collectively assert that Chinese rural household furniture reflects the local lifestyle and behaviours of residents, while also reasonably utilizing local materials and exhibiting regional characteristics. They emphasize the regionality of rural furniture, noting that the differing labour and living habits of villagers across various regions lead to distinct demands for furniture forms. However, current literature indicates that research on Chinese rural household furniture has not adequately considered regionality (Guo *et al*., 2023). Therefore, this research is essential for an in-depth exploration of the rural lifestyle and household furniture in the Jidong region.

2.2.3 Chinese Rural Traditional Furniture

There are various definitions of Chinese rural traditional furniture. Scholars from the Chinese Classical Furniture Culture Research Centre (2019) argued that furniture produced before the establishment of the People's Republic of China (1949) is referred to as traditional furniture. Zhang (2016), Hu (2002), and Huang (2014) suggested that distinguishing traditional furniture from modern furniture requires consideration of two aspects: first, whether the furniture exhibits characteristics of its era, and second, whether it reflects the lifestyle and customs of a particular time while maintaining its historical appearance. Furniture produced today that retains an old appearance can only be classified as "antique-style furniture," "replica furniture," or "neoclassical furniture," rather than "Chinese traditional furniture." In this research, the researcher supports the perspective of Zhang and others, focusing on the

traditional household furniture in Jidong rural areas that reflects the social and lifestyle characteristics of a specific historical period.

2.2.4 Currently Chinese Rural Furniture

The concept of currently Chinese rural furniture refers to the furniture that is used in rural households. In recent years, many scholars have conducted in-depth discussions on the existing problems related to rural furniture usage. For instance, Nong (2022) pointed out that rural residents are purchasing modern urban furniture that is unsuitable for rural living needs, resulting in the loss of the unique character of Chinese villages. This trend is detrimental to the transmission of traditional customs and the advancement of new rural cultural construction policies.

Although these studies summarize issues related to rural furniture in China, their scope is relatively broad, and the depth of analysis is insufficient. The cultural and lifestyle characteristics of rural areas vary across different regions, leading to different types of problems with household furniture, and consequently, the corresponding solutions should also differ. Therefore, it is necessary to further deepen the analysis of furniture issues in a specific rural area and explore methods to address these problems, thereby avoiding the pitfalls of uniform design. Taking the selected Jidong rural area as an example, households in this region possess unique lifestyles and traditional cultures. Thus, it is essential to focus on exploring the needs of household furniture users in Jidong to better serve the daily lives of rural residents.

2.3 Regional Rural Household Furniture

In this research, the researcher has organized the literature on regional rural household furniture. The researcher accessed various databases, including CIKN (China

Knowledge Network), WOS, KJD, SCIELO, and Google Scholar, setting the period from 1950 to 2024. The search keywords included "country furniture," " rural furniture," "Hebei furniture," "Jidong furniture," " regional furniture," "China rural furniture," "Shanxi rural furniture," "traditional furniture," "folk furniture," "rural lifestyle," and "civilian furniture." A total of 9,000 articles were identified, with approximately 3,000 articles relevant to this topic, of which 90% were in Chinese.

From a disciplinary distribution perspective, literature in the field of design is limited, primarily focusing on interdisciplinary studies that intersect design with other fields. The main interdisciplinary areas include Materials Science, Environmental Sciences Ecology, Forestry, Human Anthropology, Architecture, and Social Anthropology. Among these, Social Anthropology and Architecture are the most closely related disciplines to the research questions addressed in this article. The researcher has organized key thesis into a table (Appendix 1).

2.3.1 Research Direction

Currently, the research conducted by Chinese scholars on the status of regional rural furniture remains at a preliminary exploration stage, primarily divided into two directions:

Organizing and analysing traditional furniture in rural areas

This type of thesis mainly focuses on the organization and analysis of traditional furniture from specific villages or regions, typically presented in the form of a master's or doctoral theses. The aim is to fill the research gap regarding regional traditional furniture in China. The research approach involves collecting data through field investigations, and then comparing it with studies from other regions to reveal the unique furniture culture of the study area. For example, the studies by Zhang

Zhong (2005) and Zhang Yachi (2007) provided in-depth analyses of traditional furniture in rural areas of Shanxi and southern Anhui, respectively. Zhang Zhong explored the types, materials, forms, and structures of traditional furniture. Meanwhile, Zhang Yachi analysed the types and characteristics of the layout of traditional furniture in southern Anhui rural households, comparing it with traditional furniture from Shanxi and imperial furniture, thereby revealing the differences in traditional furniture across different regions.

Thus, in this research, the researcher needed to summarize the characteristics of traditional rural furniture in the studied villages regarding its types, materials, forms, structures, and styles, providing important references for the protection and transmission of local traditional furniture.

Research on the demand for furniture in rural areas

This section of the thesis primarily targets the furniture needs of rural villagers in specific regions. The research approach is to first identify issues related to the furniture itself and its usage through interviews, observations, or literature review, and then summarize the furniture demands, proposing various design solutions in response. For example, Wang *et al*. (2023) took the rural living room furniture of Yuanling village as an example, analysing the existing problems and demands in detail, and proposing design principle for market positioning, cultural adaptation, local material sourcing, and environmental fit (family space). Although he conducted an in-depth analysis of rural furniture needs, the descriptions of data collection and analysis methods were unclear, limiting readers' comprehensive understanding of the research process.

Therefore, in this research, it is essential to investigate the demand for furniture in rural Jidong. By collecting data to identify furniture-related issues and villagers' needs, the analysis of design factors is followed.

In summary, this research studies the current situation of household furniture in Jidong villages, which includes organizing the traditional furniture of the studied villages, as well as analysing the problems and demands arising from the currently used furniture in Jidong villages and providing design principles.

2.3.2 Research Methods

In terms of research methods, most literature adopts field surveys to study regional rural furniture in China. This method allows researchers to visit sites in person, directly observe, and record data, thereby collecting primary data. Whether studying regional traditional furniture or identifying issues related to the currently used furniture, the field survey method has wide applicability. In the realm of traditional furniture, Zhang Chong (2005) and Zhang Yachi (2007) employed field surveys to collect data on traditional furniture types in different regions of China. Wang Tong (2020), Sun (2014), and Wang *et al*. (2017) also utilized this method to investigate the furniture needs in various rural areas. Among them, Wang *et al*. (2017) assisted villagers in Shijia Village in utilizing local woodworking skills and materials to achieve their goal of making furniture independently. This data collection method enhances the overall value of the research.

Although field surveys are a common qualitative research method, some studies may incorporate quantitative elements within the field survey, such as using questionnaires to gather quantitative data, making the research more comprehensive. Wang Tong (2020), in her study on kitchen furniture design in rural Yuncheng, first employed

questionnaires to statistically analyse residents' lifestyles. She then entered users' homes and used observational methods to organize the issues residents faced while using kitchenware, translating these problems into specific needs. Her research combined qualitative and quantitative methods to obtain more comprehensive and multidimensional data.

Therefore, this research also adopts the field survey method, incorporating quantitative elements to collect data on traditional furniture in the studied villages and to analyse the furniture needs in Jidong rural areas. This is discussed in detail in Chapter 3 of the thesis.

2.3.3 Classification Methods

Since ancient times, there have been various methods for classifying furniture, which can be categorized according to function, material, style, and residential space (Chen, 2014). However, there is currently a lack of detailed classification standards for regional rural household furniture.

Literature shows that in the study of regional rural traditional furniture, the necessity of classification depends on the number of furniture types discovered; when the types are numerous, they may be classified by function. For example, Wang (1985) categorized Chinese Ming-style furniture into chairs and stools, tables and desks, beds and couches, cabinets, and others, discussing the shape, structural form, and decorative methods of each category. Engler *et al.* (2009) divided American rural furniture into categories based on function: for eating and drinking, for reading and writing, for dressing and sleeping, for sitting and reflecting, for cooking and baking, and for storing and keeping. However, in cases where the number of furniture types is limited, classification is not necessary. Generally, when a few pieces of furniture are

discovered, only those pieces are recorded. This research is limited to four villages, and although the number of traditional furniture pieces may be substantial, the types may be few. Therefore, special classification is not needed, and when recording furniture, it is essential to clearly describe the basic information regarding the function, material, decoration, and usage of each type.

In literature concerning the issues related to the currently used furniture in regional rural settings, furniture is typically classified according to residential space. This classification method analyses the function, layout, usage, problems, and needs of furniture in relation to family space as a whole. For instance, Zhang (2007) analysed hall furniture, study furniture, bedroom furniture, and other types of furniture based on the family spaces in southern Anhui Province. This classification method not only allows for a detailed enumeration of furniture types but also demonstrates the role of furniture within the overall residential environment. Therefore, in this research, the researcher organizes the issues and needs related to the currently used furniture based on spatial classification.

2.4 Rural Household Lifestyle Theories and Currently Used Furniture

Researching the currently used furniture in rural areas can be approached from multiple perspectives, including market dynamics, management, the inheritance of Chinese furniture culture, and comparisons between Chinese and foreign furniture cultures (Li, 2015). Articles on these topics are frequently published in relevant media. However, the literature indicates that the number of papers studying the lifestyle aspects of currently used regional rural furniture is the highest, and their research outcomes hold significant value. This is because, whether from the market,

management, or furniture culture perspective, these studies involve examining the lifestyles of furniture users, including consumer behaviour and daily life practices.

The connection between lifestyle and furniture has long been a subject of research. The first issue of the Bauhaus magazine in 1929 published a short essay by Hans Meyer titled "*Bauhaus and Society*," which stated: " *Does today's German society not need thousands of people's schools, people's parks, people's houses, hundreds of thousands of people's residences, and millions of pieces of people's furniture? Researchers should strive to gain as broad a perspective on people's lives as possible, have as deep an insight into people's wishes as possible, and aim to acquire extensive knowledge of the public. As organizers, researchers serve this public group, and their work is to serve the people.* (Li, 1988) " Scholars such as Hai (2007), Chen (2014), and Wu (2021) have also emphasized the importance of daily life in furniture design in their articles. They agree that designing new furniture entails creating a new lifestyle. To understand the current state of furniture use, the researcher must first analyse the lifestyles of furniture users and summarize the problems and needs arising from furniture use across different lifestyles.

Currently, scholars researching regional rural furniture have deeply integrated their studies with the lifestyles of local villagers. Wang Hefa (2011) simulated the lifestyles of rural urbanized residents in Northern Jiangsu Province, identifying problems in furniture use during daily life and designing furniture in response. Li (2015) examined the labour, consumption, social interactions, and entertainment lifestyles of rural areas in Chengdu, proposing strategies and evaluation systems for residential design in rural housing. Wang Tong (2020), based on lifestyle theory, conducted quantitative and qualitative research on the dining and kitchen lives of rural residents in Yuncheng, summarizing needs and proposing design factors. Subsequently, Wang *et al.* (2023) analysed the typical lifestyles of villagers in a village in Yuanling County, Huaihua

City, Hunan Province, and identified the design needs for rural living room furniture, proposing corresponding design principles. Therefore, in this research, the currently used furniture in rural areas of Jidong also needs to be aligned with the lifestyle of Jidong villagers.

In this section, the researcher leverages lifestyle theory to redefine the rural household lifestyle, including the concept, its constitutive elements, and the content of rural household lifestyle.

2.4.1 Concept of Rural Household Lifestyle

Different disciplines define lifestyle in varying ways, and in furniture design research, the understanding of lifestyle can mainly be divided into three categories.

The first definition emphasizes that lifestyle is the characteristic of life activities formed under the constraints of social conditions and values, which satisfies individual needs and encompasses labour, politics, material consumption, leisure, culture, social interaction, and religion (Hu *et al.*, 2023). The second definition limits "lifestyle" to daily activities, focusing on individual behaviours and household activities, such as clothing, food, housing, and travelling (Zhu, 2010; Li, 2015). Comparatively, the second definition has a narrower scope of research, concentrating on daily life patterns. The third definition suggests that there are no absolute boundaries in understanding lifestyle, and it should be understood in conjunction with the research perspective and content (Wu, 1992; Jin, 2010). In this research, the researcher is more inclined to adopt the third definition. This research focuses on the current status of regional rural, currently used furniture and is limited to the household space. Therefore, in this research, the rural household lifestyle refers to all lifestyle activities related to currently used furniture within the household space.

2.4.2 Components of Rural Household Lifestyle

Professor Wang (1995, pp. 41-48) proposed three components of lifestyle based on social conditions and values: conditions of living activities, subjects of living activities, and forms of living activities. This framework has been widely applied in the analysis of the lives of furniture users (Hu *et al.*, 2023; Jin, 2010; Li, 2015). The researcher has adapted this framework to better suit the study of rural furniture lifestyles (Figure 2.1).

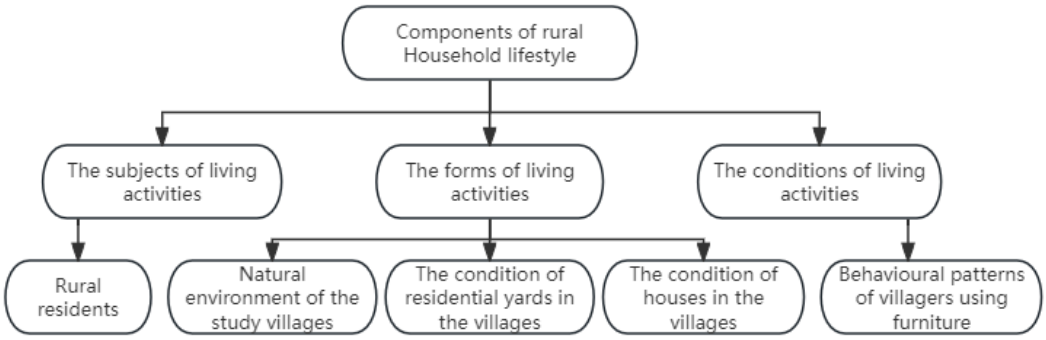


Figure 2.1 Components of rural household lifestyle (Adapted from Wang, 1995)

The subjects of living activities are individuals, groups, or societies that occupy a central position in the structure of the lifestyle under consideration (Wang Tong, 2020). In this research, the subjects of rural household living activities are the rural residents of the research area.

The conditions of living activities refer to all external objective conditions that influence the target population, primarily including natural and social environments (Hu *et al.*, 2023). The natural environment encompasses geographical location, climate, temperature, and other factors. The social environment involves farmers' economic income, consumption levels, and living conditions, which partially overlap

with the content of rural household lifestyles studied later. In this research, the conditions of rural household living activities need to be linked to currently used rural furniture, focusing on the natural environmental background and certain aspects of the social environment of the furniture, including the natural environment of the village, the conditions of residential yards and houses in the village.

The forms of living activities are the behavioural styles and patterns of the target population's activities (Hu *et al.*, 2023). Different regions, ethnic groups, and communities exhibit specific and typical lifestyles, including aspects of production, consumption, and leisure. These differences contribute to their unique lifestyles. To thoroughly investigate the forms of rural household living activities, it is necessary to carefully analyse the specific behaviours of villagers currently used furniture within the diverse content of lifestyles in the research area, allowing for a more comprehensive understanding of rural residents' furniture-related activities.

2.4.3 Content of Rural Household Lifestyle

In the study of lifestyles, the researcher has found that, despite slight variations in specific classifications, analyses generally focus on several aspects, including clothing, food, housing, transportation, and leisure. For example, Wu (1992) summarized the content of lifestyle from the perspective of material resources into four aspects: consumption lifestyle, labour lifestyle, leisure lifestyle, and spiritual lifestyle. Professor Wang (1995) further expanded this framework to include political and social lifestyles.

Within the literature concerning rural household lifestyles and the use of furniture, studies on living and eating, income and consumption, communication and recreation are relatively abundant. Jin (2010), Wang Tong (2020), and Wang *et al.* (2023) have

conducted in-depth research on living room furniture in rural Zhejiang Province, kitchenware in rural Yuncheng County, and currently used furniture in Yuanling County, respectively. Moreover, Li (2015) analysed the residential types in rural areas of the city of Chengdu, not only addressing the aforementioned aspects but also detailing how local wedding and funeral customs, home-based production activities, and industrial types influence currently used furniture.

Therefore, the fundamental aspects of rural household daily lifestyles, such as social interactions, eating, and consumption, are particularly essential in furniture research. Additionally, the special lifestyles associated with weddings, funerals, and labour in rural households also warrant inclusion in the study.

Content of rural household daily lifestyles

Rural household daily lifestyles primarily encompass living and eating, income and consumption, communication and recreation (Wang, 1982, pp. 467-471; Li, 2015; Jin, 2010). Living and eating are the most basic daily needs. These activities typically occur in the inner and main rooms (or bedrooms and living rooms), directly influencing the arrangement of furniture in these spaces.

Income and consumption refer to the various trading activities conducted by individuals. These factors directly or indirectly affect rural residents' purchasing power and preferences for furniture (Li, 2015). With societal development, the consumption levels of rural residents in China have gradually increased. Consumers now purchase furniture and home appliances through physical stores or online shopping, shifting their consumption mindset toward a "moderately prosperous" consumption model (Pengpai News, 2022). This change indicates that rural residents' consumption attitudes have evolved to prioritize the quality, design, and durability of

furniture, rather than merely focusing on low prices, thereby fostering the emergence of new furniture preferences and demands. Whether a similar phenomenon is occurring in rural Jidong is central to this project.

Rural communication and recreation (leisure) lifestyles refer to the ways in which villagers meet their spiritual needs, generally yielding pleasurable experiences (Yang, 2020; Tong, 2003). This aspect significantly influences villagers' choices regarding entertainment furniture.

Unique social interactions and entertainment practices, like playing mahjong and playing poker, continue to hold significant importance in rural areas (Li, 2015). The selection of specific venues for these activities and the necessity for particular furniture configurations (e.g., mahjong tables and seating) represent topics for exploration in this research. Additionally, the enduring customs of visiting relatives, chatting at home, and gathering for meals raise questions about the need for corresponding furniture support and the specific spaces within homes where these activities occur, which this research also focuses on. Furthermore, with advancements in society, economy, and technology, urban social interaction and entertainment practices are gradually permeating rural life (Tian *et al.*, 2007). For example, using computers and mobile phones as new forms of entertainment are generating new demands among rural residents, which likewise necessitates continued research.

Content of rural household special lifestyles

Unique rural household lifestyles mainly encompass home-based production activities and folk customs.

A decade ago, the primary production lifestyle in rural areas was largely labour-oriented, with farmers relying predominantly on the land for their livelihoods (Jin, 2010). However, significant changes have occurred in the production lifestyles of rural China, where some farmers can now engage in production activities at home. This phenomenon is referred to as rural home-based production (Pengpai, 2019; Yin *et al.*, 2020; Zhu, 2023). In this mode of production, residential spaces may transform into shops or workplaces (Ren *et al.*, 2012). Ma *et al.* (2018) noted that the functions of rural settlements have shifted from merely serving as residential land to integrating industrial land in suburban Beijing. Nong (2022) argued that these new home-based production modes alter the daily living spaces of households, thereby influencing furniture functionality.

Currently, the units conducting production in rural families are typically termed "family workshops," mainly utilized for home-based handicrafts or small-scale processing, such as metalworking, food processing, vegetable cultivation, village shops, and mahjong parlours (Van Auken *et al.*, 2011; Rogge *et al.*, 2013). These workshops are defined as "*workshops run by families, dominated by couples, with participation from blood relatives in production, employing no more than five workers, where family members and workers produce together*" (Gu, 2018).

Thus, family workshops, as a unique operational model, aim to engage in market exchange, achieving self-sufficiency. However, they occupy living space, intertwining life and production within the same environment, thereby altering the functions of traditional family spaces and furniture (Yangang *et al.*, 2014). This research examines whether this mode of production exists in rural Jidong, and if so, whether it affects the demand for furniture used by family members or workers, which needs to be investigated in this research.

In rural settings, families frequently host various traditional folk activities, especially during traditional festivals. Among traditional festivals, the New Year and weddings are the most significant celebrations in rural areas.

The processes for hosting New Year activities at home vary based on region, family customs, and personal preferences. Generally, the process is as follows: prior to the New Year, families purchase a large quantity of festive goods, including food, beverages, fireworks, and New Year paintings, storing these items in cabinets, refrigerators, and cupboards. Subsequently, family members clean all furniture in preparation for the arrival of the God of Wealth. On New Year's Day, the entire family gathers for the reunion dinner. Within the ten days following the New Year, families need to provide ample seating and space to receive relatives and friends coming to pay New Year's visits. This research explores whether rural families in Jidong still uphold the tradition of hosting New Year celebrations at home and whether the furniture usage during these events differs from daily needs.

Regarding weddings hosted at home, there are primarily two scenarios. The first involves families managing the wedding banquet process independently, typically with assistance from neighbours (Shang, 2024). Before the wedding, family members arrange the venue according to the available living space and borrow tables, chairs, and kitchen utensils from neighbours. On the wedding day, families utilize some traditional furniture, such as offering tables, for ceremonies, while preparing a sumptuous feast for guests, often with help from relatives or neighbours. After the wedding, cleaning and organizing the furniture also involve mutual assistance among friends and family. The second scenario involves hiring professional teams to handle the wedding banquet. These teams bring their own tables and kitchenware and are responsible for washing vegetables, cooking, serving dishes, and cleaning up, requiring no involvement from relatives or friends, and their fees are moderate (Xu,

2021). This research investigates which wedding hosting model is employed in rural Jidong whether it creates new furniture demands, and whether these demands resemble those encountered during New Year celebrations.

Therefore, this research uses both literature review and field observations to understand the daily and special lifestyle content of rural families in Jidong, analysing which lifestyles influence which currently used furniture, how they influence it, whether they generate furniture-related issues and needs, and exploring corresponding design principles to address these challenges.

2.5 Research Framework for Examining the Current Status of Regional Rural Household Furniture

Based on the previous literature review, existing research on the current status of rural household furniture primarily focuses on two aspects: the organization of traditional furniture and the demand for currently used furniture. Wang Hefa (2011) conducted a field study to analyse the current state of furniture during the urbanization process in northern Jiangsu's rural areas. In terms of traditional household furniture, the authors summarized the types of traditional furniture in northern Jiangsu, including dimensions, usage modes (functions), styles and decorations, materials, and manufacturing processes. Regarding currently used furniture, the study examined factors such as lifestyle customs, purchasing power, and living space environments in northern Jiangsu's rural lifestyle, identifying various issues in furniture usage and conducting design strategy analysis. However, this research lacks depth in both aspects of traditional and currently used furniture and does not present a clear research methodology, such as methods for data collection and analysis, nor does it form a comprehensive research framework. Furthermore, Yan (2012) analysed the current state of rural furniture in central Hunan through field survey methods,

integrating relevant theories of furniture design. However, his research only covers the demand for currently used furniture and does not systematically analyse the scattered traditional furniture in central Hunan. Subsequently, Zhang (2016) conducted supplementary research on the traditional furniture of this region.

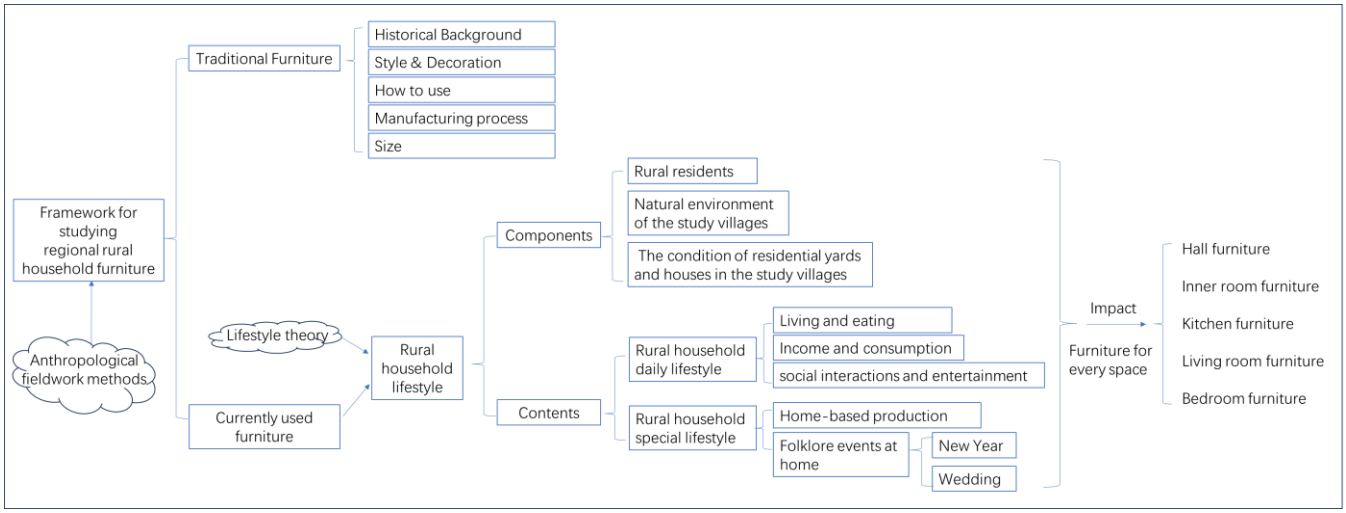


Figure 2.2 Research framework for the current status of regional rural household furniture

Therefore, the study of regional rural household furniture requires the use of anthropological ethnographic fieldwork, comprising both traditional and currently used furniture (Figure 2.2). In the section on traditional furniture, information regarding historical background, styles and decorations, dimensions, usage modes, and manufacturing processes needs to be systematically organized; in the section on currently used furniture, the study utilizes the components and contents of rural household lifestyle theory to analyse the background of currently used furniture, the user population, and the furniture needs in various household spaces under different lifestyles.

2.6 Overview of Rural Jidong

This section conducts a systematic study of household furniture and its surrounding environment in rural Jidong from the perspectives of design, architecture, and folk culture. Through a search of keywords such as "rural Hebei East," "Tangshan furniture," "Hebei rural furniture," " Jidong inner room," " Jidong rural lifestyles," " Jidong rural," and " Jidong kang" via the National Library Reference Consultation Alliance and CNKI, it was found that research on the household furniture in rural Jidong is relatively scarce. Most papers focus on the lifestyles in the Jidong rural region. Furthermore, literature exploring the relationship between rural lifestyles and household furniture in Jidong is also very rare, which is the reason for this research's initiation.

In this subsection, the researcher organizes relevant literature regarding the environment of rural Jidong, traditional furniture, and the currently used furniture.

2.6.1 Residential Environment in Rural Jidong

Rural Jidong is primarily characterized by flat plains, with hot summers and cold, dry winters, and the area experiences relatively abundant annual rainfall. Poplar trees are the predominant species in this region.



Figure 2.3 11 types of yards in rural Jidong. (Adapted from Wang *et al*. 1962)

In 1962, Wang *et al.* classified 11 types of yards in rural Jidong (Figure 2.3). Subsequently, Hou (2018), Wang (2018), and Mao (2020) conducted detailed analyses of the residential types depicted in the figure. They argued that rural residences in Jidong exhibit the yard characteristics typical of traditional northern Chinese farmhouses, featuring independent yards and relatively large building spaces that serve both residential and some production functions. However, despite these studies providing thorough descriptions of the layouts of different types of yards, it remains unclear which house types are the most popular and their specific layouts, which is a key focus for further research in this research.

Currently, Shao (2023) provides a brief description of two types of residential areas in rural Jidong. The first type is a single-story, single-entry yard farmhouse (Figure 2.4), with the living area typically divided into three parts: the central hall primarily

serving as a dining and kitchen space, with inner rooms on the east and west sides that accommodate both living and guest reception functions. The second type is a single-story, multi-entry yard farmhouse (Figure 2.5), which generally consists of three to five rooms of roughly equal size, with a living room in the centre and bedrooms on both sides. The rest of the space is set up as an eating space, bathroom, utility room or bedroom. Although these descriptions analyse the division of family space, they lack detailed explanations regarding specific spatial dimensions and the placement of household furniture within these spaces, which necessitates further investigation in this research.

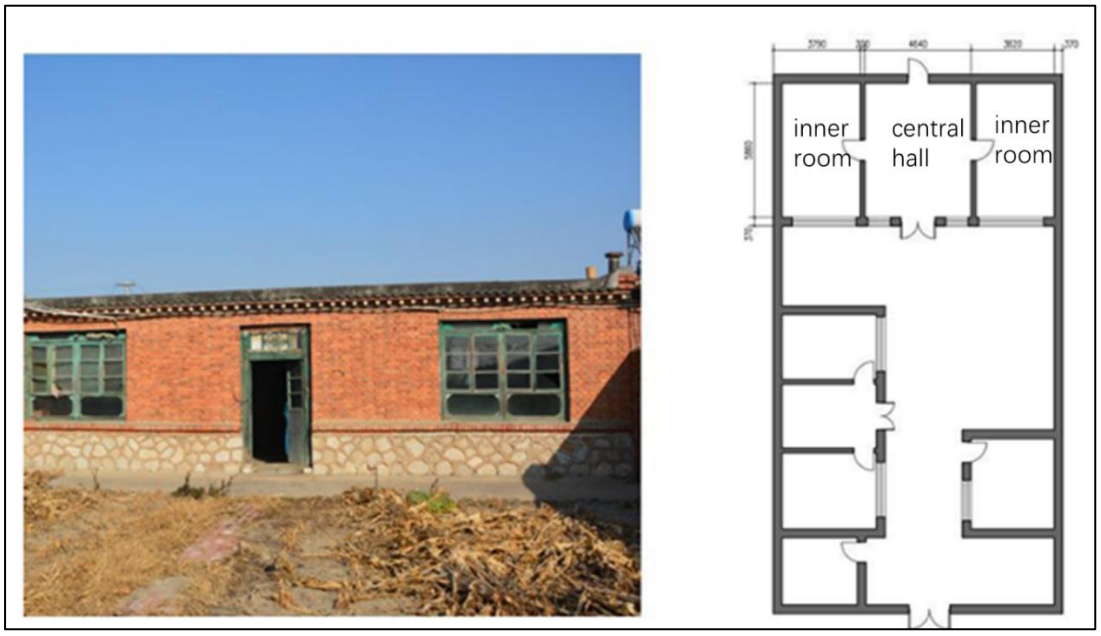


Figure 2.4 Single-story, single-entry yard farmhouse. (Adapted from Shao, 2023)

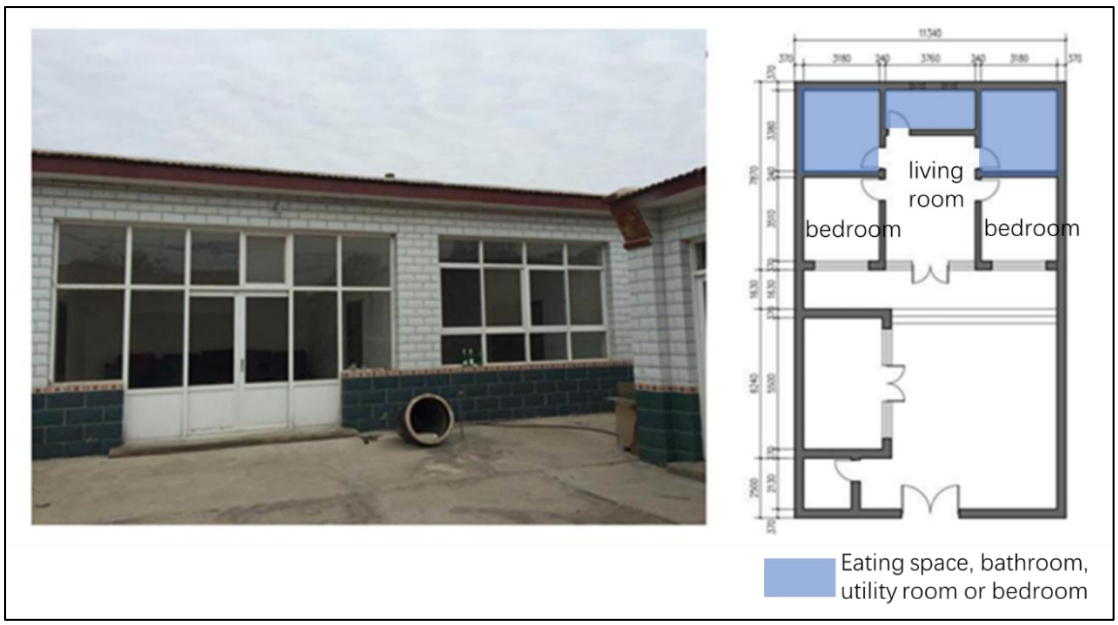


Figure 2.5 Single-story, multi-entry yard farmhouse. (Adapted from Shao, 2023)

2.6.2 Traditional Furniture in Rural Jidong

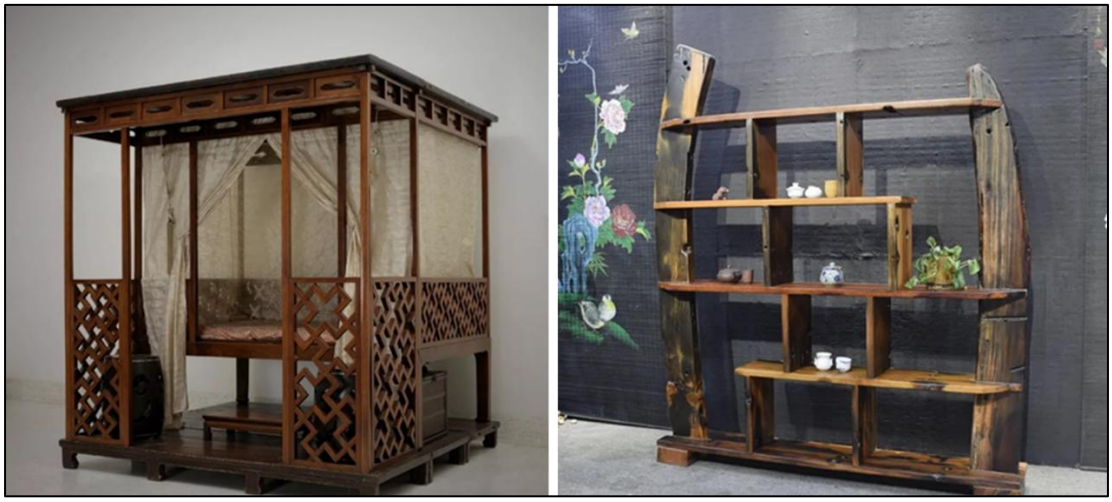


Figure 2.6 Bisha cabinet and Bogu shelf (Wang, 2018)

Wang (2018) mentioned that some traditional furniture in rural Jidong, particularly in the coastal area of Shanhaiguan, includes items such as the Bisha cabinet[1], Bogu

[1] Bisha cabinet is an independent space created within the inner room using partitions.

shelf[2] (Figure 2.6), kang[3] (Figure 4.48), and stove[4] (Figure 4.53). However, he only referenced these pieces and included photographs without providing specific descriptions of their functions, decorations, or the craftsmanship involved in their production. This content needs to be supplemented in this research. Furthermore, Yu *et al.* (2020) pointed out that due to the relatively isolated rural living environment and lower economic levels, furniture-making techniques remain underdeveloped. The types of wedding furniture continue to adhere to tradition, primarily crafted by local artisans using ancient methods. They studied the dimensions, functions, and decorative patterns of traditional wedding furniture in Jidong, including tall cabinets[5], storage tables[6], altar tables[7], kang cabinets[8], and high chairs[9], noting that with the passage of time, traditional customs have evolved, leading to the gradual disappearance of these categories of wedding furniture in Jidong.

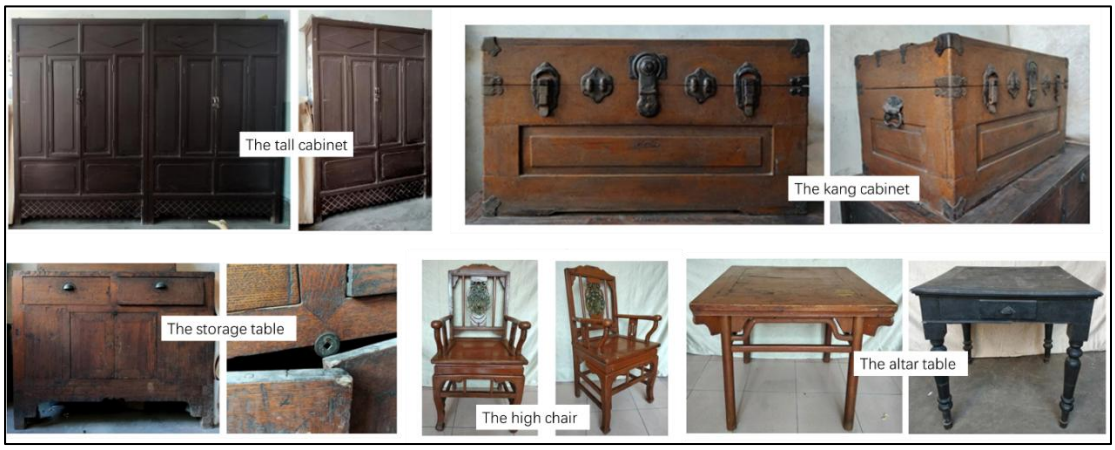


Figure 2.7 Tall cabinet, storage table, altar table, kang cabinet, and high chair (Yu *et al*., 2020)

[2] Bogu shelf is a piece of furniture used to display antiques, jade, and other small items.

[3] Kang is constructed of bricks and stones, positioned in the inner room, serving a functioning similarly to a modern bed.

[4] Stove is located in the hall and is used for cooking and also heats the kang.

[5] The tall cabinet is a vertical wooden cabinet used for storing clothing.

[6] The storage table serves the function of a dressing table.

[7] The altar table (also known as the "Heaven and Earth table",” Offering tables”) is centrally located in the hall for dining or placing items, and it is used during weddings as the Heaven and Earth table.

[8] The kang cabinet is used for storage and is placed on the kang.

[9] The high chair is mainly placed in the hall alongside the altar table for family dining or receiving guests.

Thus, the researcher reasonably speculates that there are still undiscovered traditional furniture pieces in rural Jidong. This research requires the collection and organization of these furniture in the studied villages.

2.6.3 Currently Used Furniture in Rural Jidong

Research literature on the currently used furniture in the daily lifestyles of rural Jidong has been available for some time, but the coverage is generally limited, often focusing on individual pieces of furniture and their solutions. For instance, Wang *et al.* (1962) conducted design modifications regarding materials and ergonomics for stoves in the hall of rural Jidong. Subsequently, scholars such as Ren *et al.* (2017), Yan *et al.* (2018), Zheng (2019), and Shao (2023) conducted varying degrees of research on the heating methods and human comfort of kangs in inner rooms, addressing daily activities such as sleeping, receiving guests, dining, and entertainment, resulting in some improvements.

These studies show that while the researchers were able to summarise some of the problems with the currently used furniture in rural Jidong, the overall picture still seems incomplete. Additionally, since some of the literature is dated, it is essential to consider whether villagers have resolved these issues independently or whether new problems have emerged. Therefore, this research does not focus on individual pieces of furniture but conducts a comprehensive analysis of the currently used furniture within the entire household space to identify problems and propose corresponding design principles.

Within the special lifestyle of rural Jidong, the currently used furniture serves different functions during various folk activities. As early as 2011, Yu *et al.* explored

the usage of altar tables during the Spring Festival. Later, Yan (2022) introduced the functions and usages of rural furniture in different contexts. Thus, the researcher reasonably speculates that some furniture in rural Jidong may serve different functions during traditional festivals compared to daily use; however, current research on this topic remains insufficient and requires exploration.

Home-based production activities within households also represent an important aspect of rural Jidong's special lifestyle, influencing the currently used furniture. Wang (1962), Wang (2018), and Zhang (2020) all noted the existence of planting areas within yard layouts in rural Jidong. Among them, Zhang mentioned in his paper: "*Between the side house and the main house, some have set up chicken coops, rabbit houses, etc. Chickens and rabbits, being relatively small livestock, are located close to living areas, facilitating the owner's care and safety needs.*" This information indicates that household farming and planting have existed in village's yard since ancient times. However, existing studies have only provided brief descriptions of these spaces, and the specific types of production and their impacts on currently used furniture require in-depth investigation.

Additionally, scholars such as Meng *et al.* (2020), and Chen *et al.* (2020) have described types of home-based production from the perspective of Chinese rural left-behind women[10], including simple handicrafts, yard vegetable planting, and poultry farming. Ren (2013, 2017) conducted fieldwork in Li Village, Hebei Province, analysing the "living room factory" model within the context of rural industrialization and the situation of the women involved. He discovered that young women recognized the inadequacies of intergenerational care and rationally chose to remain

[10] Left-behind women are married women who have stayed behind in rural areas because their spouses have been away for a long period of time (usually more than six months) to work, do business or engage in other production and management activities.

in rural areas, purchasing sewing machines in their household living spaces to organize women for handicraft work. He noted: "*Processing stalls are set up in the living room of the Ma Sheng family, with the cramped space filled with sewing machines, finished products, and raw materials. The walls of the living room are piled with processed and bundled products.*" These vivid descriptions of work content reflect the state of home-based production occurring within the living room space, and the impact of home-based production on the currently used furniture is an important aspect that this research requires in-depth study.

2.7 Gap in Literature and Research Questions

Based on the literature review, current research on the status of household furniture in rural Jidong has not been fully developed, revealing two key gaps in the research.

Firstly, regarding traditional furniture in rural Jidong, historical factors and natural disasters (such as earthquakes) have led to the destruction of a large amount of documentary materials on traditional furniture in this region. Although some research has recorded traditional rural furniture in Jidong, it remains insufficiently comprehensive. Therefore, based on this research gap, this research aims to conduct an in-depth exploration of the current status of traditional furniture in rural Jidong. In research on other rural areas, traditional furniture is usually documented through field investigations to collect primary data. However, given the vast area of Jidong, this research selects specific study areas as samples to systematically organize and study the traditional furniture within these regions. Hence, the first research question proposed by this research is: **What traditional furniture was discovered in the villages surveyed?**

Secondly, regarding the current currently used furniture in rural Jidong households, the existing literature only briefly mentions that problems have arisen with the currently used furniture in rural Jidong, but these studies are not comprehensive enough. In addition, the researcher found that studies in other regions that combined current furniture use with lifestyle theories could shed a fuller light on the problems that arise with furniture. Therefore, this research proposes a second question: **What problems and needs do residents have regarding furniture in the context of the lifestyle of rural households in eastern Hebei?** In terms of existing literature, once the furniture issues in the study area have been identified, an analysis of design principles is required. Thus, a third question: **What improvement principles can be proposed for the design and usage of furniture in rural households of eastern Hebei, considering their current lifestyle?**

To better address these gaps and answer the research questions, the researcher has further refined these three research questions based on the literature review:

Background: ***What is the overall environment of rural Jidong? What is the lifestyle in rural Jidong? What is the layout of the yards in rural Jidong?***

Traditional Furniture: ***What types of traditional furniture exist in the studied villages? What are the characteristics of each type or piece of furniture, including aspects such as size, usage, function, decoration, and manufacturing process?***

Currently used furniture: ***What types of currently used furniture are found in rural Jidong? How is furniture spatially arranged? Under the guidance of the lifestyle theory of rural households, what is the current status of the furniture? (The last question can be divided into two aspects: What problems have arisen in***

currently used furniture in the daily lifestyle of rural Jidong? What needs exist? What problems have arisen in currently used furniture in the special lifestyle of rural Jidong? What needs exist?)

Design factors and principles: ***Under different lifestyles, are there solutions to the furniture problems in rural Jidong?***

The above aspects guide the planning of subsequent research methods and steps.

2.8 Summary

This chapter presents an understanding of previous research and theoretical approaches, identifying that this research studies the current status of household furniture in rural Jidong from two aspects: traditional furniture and the currently used furniture. It also refines the research questions, laying the foundation for the subsequent research methods and steps.

3 Methodology

3.1 Introduction

After refining the research questions, the researcher collected data to meet the research objectives. This chapter describes in detail the development of a research methodological framework to collect data on the current state of household furniture in rural Jidong. The framework was derived from the interpretivist research paradigm and guided the field study through mixed-methods in anthropological fieldwork.

In this chapter, 3.2 presents the design of the whole methodological framework of the field study. The philosophical part is discussed in section 3.3. Sections 3.4 and 3.5 include the selection of the research methodology, the preparation for entering the field, and the detailed description of the five steps of the fieldwork. The ethical component is also discussed in section 3.4.

3.2 Research Process

Any formal research study needs to be designed with reference to the specific context of the research question. Crotty (1998, p. 1) remarked that there is a bewildering array of philosophies, paradigms and approaches in the literature, often arranged in a disorganised manner, with unclear links to theoretical elements and inconsistent use of terminology. Saunders, Lewis and Thornhill (2019, p. 143) also confirmed this is a confusing picture which confronts the researcher. However, there is a difference in their design of the research framework.

Crotty's framework oversimplifies the complexity of the research process. It contains only four elements: epistemology, theoretical perspective, methodology and methods

(Figure 3.1). Typically, a complete study tends to involve many intertwined elements, and reducing it to four elements may overlook some important aspects. Secondly, these four elements are quite abstract concepts that some researchers may have difficulty applying concretely to actual research projects. The researcher finds it challenging when trying to translate these concepts into practical research designs and methods.

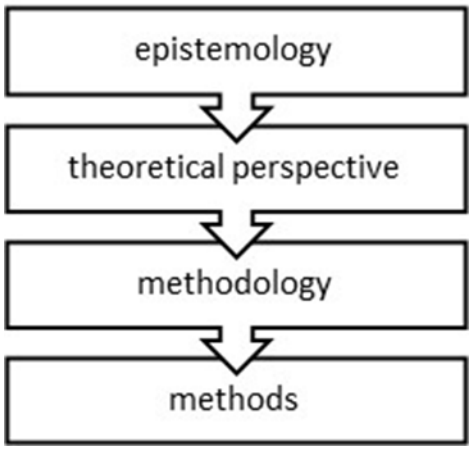


Figure 3.1 Crotty's Four Elements of the Research Process. (Reproduced from Crotty, 1998, pp. 4)

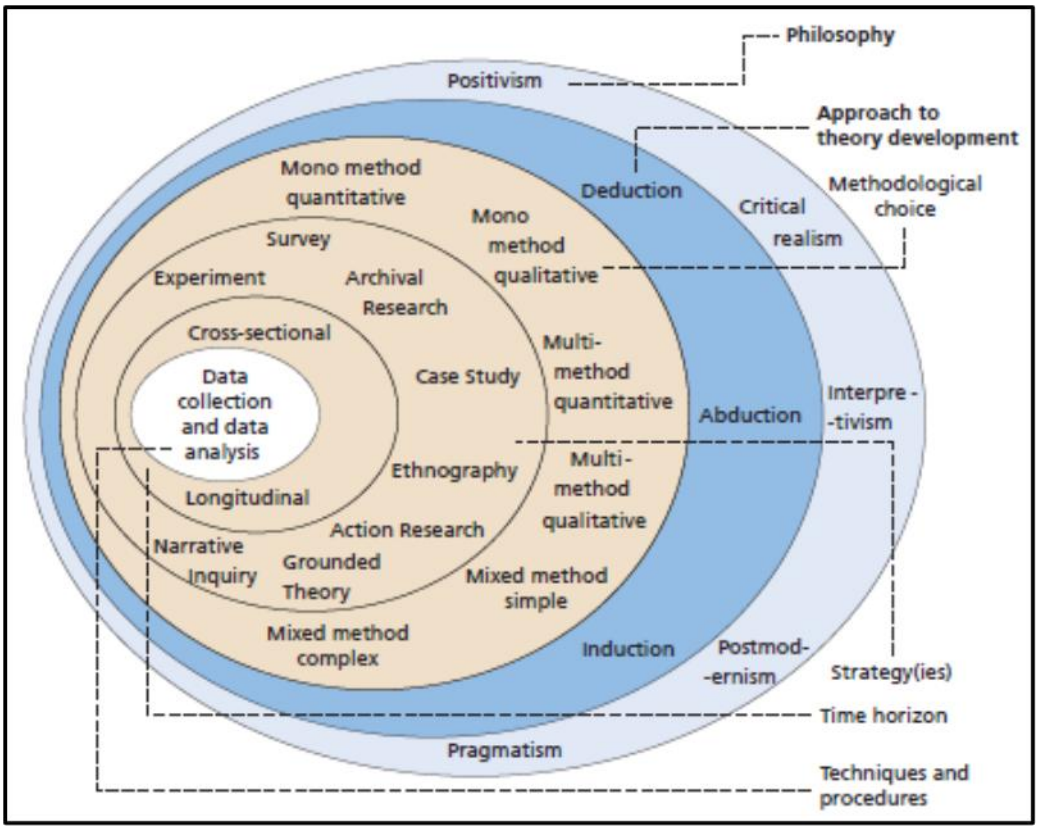


Figure 3.2 Saunders, Lewis and Thornhill's 'Research onion'. (Saunders, Lewis and Thornhill, 2019, pp. 130)

The researcher found the methodological framework of the six-layered 'research onion' (Figure 3.2) proposed by Saunders *et al.* (2019) to be appropriate for this research project. Saunders et al summarised the design from philosophical paradigms to specific research methods in an ‘onion’ diagram. This research framework consists of six layers: research philosophy, problem understanding, research design selection, data collection, data analysis, and interpretation and application of findings. Unlike Crotty's framework, which focused on the theoretical foundation and philosophical orientation of research, Saunders concentrated on guiding the researcher's steps and decision-making during the actual research process, which provided more concrete guidance for the selection and implementation of this research project.

Therefore, this research follows Saunder's (2019, p. 130) structure as laid out in Table 3.1. Based on this research project, the researcher has partially adjusted their research framework. It seems that some of the levels can be merged; for example, the 'Approach to theory development' is merged into 'Philosophy', and both 'Time span' and 'Strategy(ies)' are merged into 'Methodological choice'. Therefore, this research design is divided into three parts: 'Research Philosophy Paradigm', 'Research Method and Design', and 'Fieldwork Process'. the researcher will discuss each of them in next sections.

Table 3.1 The research process for this research (Adapted from Saunders, 2019)

1 Research Philosophy Paradigm— (Philosophy)
Interpretivism Inductive approach
2 Research Method and design— (Methodological Choice)
Anthropological ethnographic fieldwork Mixed methods Cross-sectional
3 Fieldwork process— (Techniques and procedures)
Fieldwork research tool Data Collection and data Analysis

3.3 Research Philosophy

After the research question was identified, the researcher chose an appropriate research paradigm based on the nature and complexity of the question in order to address the research question and achieve the research objectives.

3.3.1 What is a Research Paradigm?

The term paradigm was first coined by the American scientist Thomas Kuhn (1962) in his book '*The structure of scientific revolution*'. In his book, he defined "paradigm" as a recognised 'pattern' that a particular scientific community must follow in order to engage in a particular type of scientific activity, which includes a shared worldview, fundamental theories, paradigms, methods, approaches, standards and all other things related to scientific research. Thus, a paradigm implies a worldview, an epistemological position, and a paradigm is a set of shared beliefs among members of a professional field. A paradigm can determine: how to select research questions? How to conduct research? How to interpret the results of the research?

3.3.2 Components of the Research Paradigm

The research paradigm comprises four philosophical elements: ontology, epistemology, axiology and methodology (Hughes, 2020; Figure 3.3).

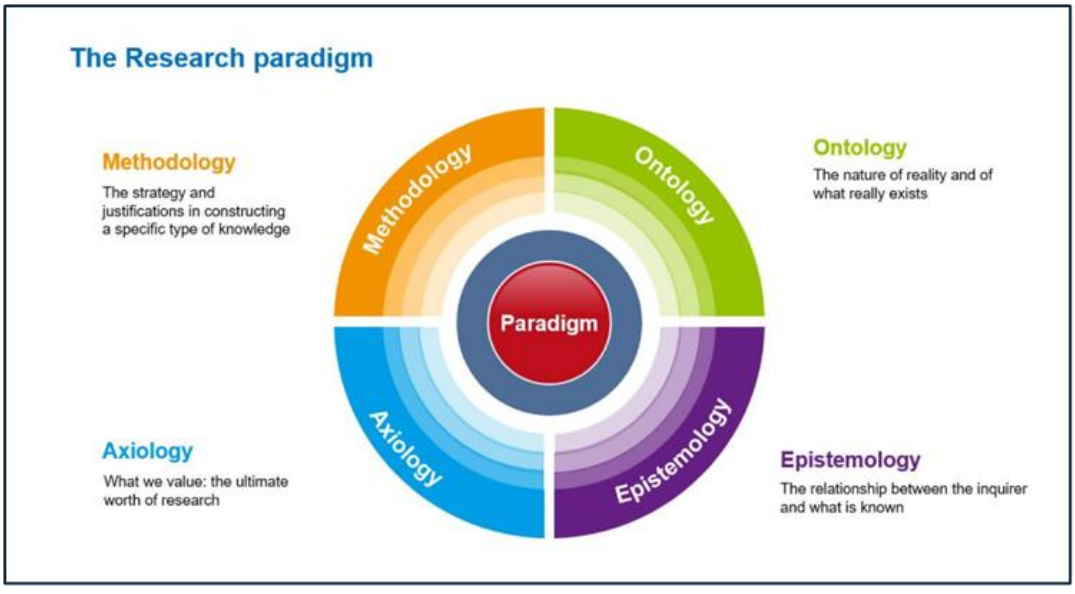


Figure 3.3 Components of the Research Paradigm. (Reproduced from Alele, 2023)

Ontology

Ontology refers to assumptions about the nature of reality. It addresses questions like, "What is the nature of reality, or is it a structure created by the mind? Is the objective real or the result of personal knowledge? What is the nature of the situation?" (Alele, 2023). Therefore, by studying ontology, researchers can better understand the nature and structure of things in the real world (Johnson & Onwuegbuzie, 2004). In addition, researchers can more clearly identify their beliefs and positions on epistemology and methodology through ontology. This clarity contributes to a better understanding of the root cause of the problem and the associated theoretical underpinnings, helping the researcher to provide more appropriate solutions when solving the problem (Dhaheri, 2022).

Regarding the types of ontology, Ahmadu (2021) summarised the views of Crotty (1998) and Denzin and Lincoln (2000) and identified the three most dominant ontological types as, objectivism, subjectivism and pragmatism. Objectivism and subjectivism are entirely relative. Objectivism emphasises that truth is not subject to personal opinion or emotion but exists objectively. Objectivism emphasises acquiring knowledge through objective observation, reasoning and the scientific method. In contrast, subjectivism, which holds that individual subjective consciousness is essential to understanding and interpreting the world, argues that truth is relative and, therefore, there is no universal, objective truth. Pragmatism is the third ontological perspective that focuses on practice and the results of action. Pragmatism usually views truth as relative because it is judged in terms of actual situations and practical results.

Epistemology

Epistemology concerns the nature and origin of knowledge. It addresses questions like, "What is the nature of knowledge, and how does it relate to the object under study? How does the inquirer relate to me, and what is known?" (Dhaheri, 2022). These questions are important because they help researchers place themselves in the research context to discover what is new, given what is already known (Kivunja & Kuyini,2017).

Axiology

Axiology is concerned with the role of values in research. It addresses the researcher's biases, ethics, and values and how they might impact the research (Alele, 2023). In a research project, researchers need to define, evaluate and understand the concept of good and bad research behaviour through axiology. Axiology explores the values researchers assign to many aspects of their research, including the participants, the data, and the audience that report the results. It addresses questions like, "What values will the research live through or will guide the research? What should be done to uphold the rights of all participants? What are the moral problems and features to be considered? What cultural, intercultural, and ethical questions arise, and how should researchers deal with them? How can participants' goodwill be secured? How should the research be conducted in a way that is socially fair, respectful, and peaceful? What issues (real, psychological, legal, social, or economic) should be considered to avoid or reduce risk and harm to participants?" (Kivunja & Kuyini, 2017) (Dhaheri, 2022).

Axiology emphasises the importance of researchers considering ethical issues in the design and conduct of research. In other words, it ensures that researchers follow basic ethical principles throughout the research process to enhance the moral legitimacy and credibility of the research. Based on this understanding, it is important

for researchers to respect and protect the dignity and human rights of individuals participating in the research process. This includes ensuring the informed consent of research participants, protecting their privacy, and respecting their wishes and opinions.

Methodology

Methodology pertains to the specific methods and procedures used to collect and analyse data. It is influenced by the researcher's ontological and epistemological beliefs (Alele, 2023). Finnis (2011) states, "Data collection, participants, tools, and analysis are all components in the broad arena of methodology". In other words, methodology refers to the systematic methods and steps used by the researcher in conducting a research study to ensure the validity and reliability of the research. It includes a series of steps, such as defining the research problem, formulating hypotheses, selecting an appropriate research design and methodology, and collecting and analysing data (Dhaheri, 2022). This part is discussed in sections 3.4 and 3.5.

3.3.3 Positivism, Interpretivism, Pragmatism

The Positivism Research Philosophy is related to the position of natural scientists (Qawasmeh, 2020). Positivism usually means that factual knowledge is genuinely obtained through observation and the use of measuring instruments, which is the only reliable way to make credible generalisations (Ahmadu, 2021). According to Saunders and Lewis (2018), positivism aims to find causal relationships in research data to create generalisations, similar to laws, which help explain and predict organisations' behaviour. It is closely related to the deductive approach, and this use of highly structured methodologies and quantitative methods facilitates the replication of research steps (Crowther & Lancaster, 2008) (Gill & Johnson, 2010). However, positivism fails to consider the possibility that not all phenomena are empirically

based. As a result, over-reliance on the status quo tends to overlook social contexts and cultural differences, for example, that may influence the phenomenon being studied (Ahmadu, 2021).

In this research, the documentation of household furniture in the daily life and special life of Jidong villages needs to be organised based on the observations of the researcher and the perceptions of the interviewees. Then the reasons for the emergence of these furniture problems or people needs and the ways of solving them are explored. Therefore, positivism is not suitable to guide this research.

Cohen, Manion, and Morrison (2018, p.348) defined pragmatism as "focused on constructing and answering research questions or problems." Pragmatism tends to concentrate attention on things that are useful for advancing real-world action rather than being distracted by unnecessary matters (Talisse and Aikin, 2008; James, 2019). The core objective of pragmatism is to integrate theoretical inquiry with practical application to effectively address issues in the real world. Therefore, the pragmatic methodology typically prioritizes problem-solving over deepening understanding of social phenomena and their underlying meanings.

In this research design, although the researcher decided to use different data collection methods (including observation, interviews and questionnaires) and planned to analyse a combination of qualitative and quantitative data, it seems more suitable to use pragmatism as a guide. However, the research trying to solve the fundamental problems of furniture requires the researcher to understand the village society and culture, the village household furniture culture and explain the villagers' behaviours in their specific uses of furniture. Adopting a pragmatist approach may not be sufficient for understanding and explaining the meaning, context, and influencing factors of

human use and furniture behaviour. Therefore, pragmatism cannot sustain the whole process of this research.

Interpretivism holds that all knowledge is a matter of interpretation and considers social reality built on interpretation and interaction (Quinlan, 2011). It emphasizes the importance of human factors in understanding the phenomena under study (Qawasmeh, 2020). To this end, researchers subjectively extract meaning from respondents' answers based on their interaction with them and their contextual experiences (Bogdan and Biklen, 1998). Interpretivism has been criticized for its subjectivity and the inability to generalize the collected data. However, it allows for in-depth exploration of the collected data and various issues influencing the study, leading to research outcomes often characterized by high validity (Ahmadu, 2021).

Although interpretivism generally employs qualitative analysis methods, mixed methods are also applicable to interpretivism (Creswell *et al.*, 2006) (Reichardt *et al.*, 1979) (Pelto, 2015). Willis (2007, P.109-110) stated that interpretivist researchers: "*Interpretivists accept almost all of the types of quantitative methods that positivists use, but they differ in how they interpret the results of quantitative research.*" (McChesney *et al.*, 2019). His perspective offers a connection between mixed methods and interpretivism for the researcher. McChesney (2017) demonstrated how the interpretivism paradigm supports and informs the entire mixed methods research in a survey of the professional development experiences of public-school teachers in a significant educational reform in Abu Dhabi, United Arab Emirates. He used a questionnaire to collect teachers' perceptions of the impact of professional development activities and organised semi-structured interviews with 35 teachers to discuss their professional development experiences. Qualitative and quantitative data were analysed separately through thematic analysis and constructivist grounded theory. Then, indications from these analyses were brought together in order to draw

overall conclusions based on each of the research objectives (Bryman, 2007). All processes of analysis and integration are based on interpretivism perceptions. Qualitative findings are used to corroborate and interpret quantitative findings to increase the credibility of the findings.

This research entails an anthropological fieldwork approach using tools such as observation, interviews and questionnaires to collect qualitative and quantitative data to summarise the context and types of traditional furniture, the problems that arise from currently used furniture, the reasons for this and to explain the behaviour of furniture users. These steps are in line with the interpretivist approach which focuses on understanding and interpreting the meaning, context and influences on human behaviour (Saunders *et al.*, 2007). Therefore, interpretivism is more appropriate for this research.

3.3.4 Deductive and Inductive Approach

Research approaches are divided into two main types, the Deductive and Inductive approaches. Saunders and Lewis (2018) argued that all research studies need to be linked to the research approach. The deductive research method involves designing research strategies to test existing hypotheses. In contrast, the inductive research method involves collecting data to develop a theory as a result of data analysis, meaning that the theory needs to follow the collected data (Saunders *et al.*, 2007; Wilson, 2010). Positivist philosophy is commonly associated with deductive research, while interpretivism research is typically linked with inductive research (Qawasmeh, 2020).

The deductive approach is where the researcher uses existing theories to generate the required research questions; it tests existing theories by moving from broad

generalisations to specific observations (Ahmadu, 2021). This method is based on logical rigour, and conclusive conclusions can be reached through correct reasoning steps. The typical structure of the deductive approach is that a general hypothesis or principle is first established, and then, based on this principle and the known facts, the conclusion for a particular situation is derived step by step using the rules of logic (Figure 3.4).

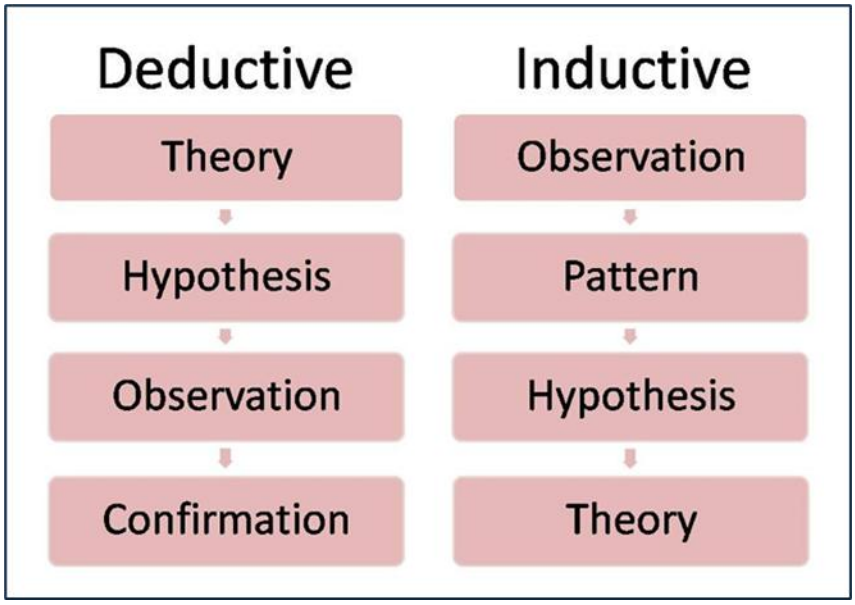


Figure 3.4 Deductive and Inductive research. (Reproduced from Qawasmeh,2020)

Although deductive reasoning is valid and reliable in many cases, it has some drawbacks. For example, its validity depends on the accuracy of the premises on which it is based. If the premiss is inaccurate, the conclusion may be wrong, even if the reasoning process itself is correct. Moreover, when the research problem becomes very complex, the application of deductive reasoning may become difficult because it requires that all the premises are clear and verifiable. Accuracy and completeness of premises may be difficult to achieve in complex problems.

Induction is the method of deducing general principles or rules from specific observations or examples. The basic idea of inductive reasoning is to observe and analyse actual data or situations in a particular case and then infer general conclusions. The typical process of the inductive approach is to first collect a large amount of specific observational data, then, by analysing and summarising these data, identify common patterns, trends or rules, and ultimately draw general conclusions (Figure 3.4). This method of reasoning is usually bottom-up, moving from the specific to the general. The inductive approach uses qualitative methods to collect data, which means that the researcher collects non-numerical data through observations, interviews, textual analyses, and so forth, in order to understand the experience or phenomenon (Ahmadu, 2012). This approach focuses more on understanding the meanings, subjective feelings and socio-cultural context behind the events rather than just analysing numerical values. In addition, the inductive approach has a more flexible research structure than traditional quantitative research. Inductive research allows researchers more flexibility to modify their research design and methodology to accommodate new findings and understandings during the course of the study. This flexibility allows researchers to gain a deeper understanding of events and phenomena, allowing them to tailor the focus and direction of their research (Saunders & Lewis, 2018).

In this research, the inductive approach is preferred, and the researcher needs to create new knowledge and understanding from the responses and behaviours of the interviewees or the observed. For the currently used furniture, the researcher needs to summarise the problems with furniture in the respondents' daily and special lifestyle, explain the reasons for the problems with furniture, and suggest design principles to address the problems with furniture. For traditional furniture, the researcher needs to use open-ended interviews to collect the types of furniture, production processes, and dimensions to fill the gap in furniture literature resources in the study area.

3.4 Research Method and Design

3.4.1 Anthropological Fieldwork

The Origin of fieldwork

"Fieldwork" refers to all on-site research activities involving direct participation and observation, also known as "field research, field investigation". It is the practice and application of direct observation and the data collection step in order to obtain first-hand primary information (Baidu, 2024). In the late 19th century, British scholar A. C. Haddon introduced the "field concept" into the field of anthropology. He encouraged individuals to conduct fieldwork on foreign cultures, which led to the widespread use of fieldwork in anthropology.

The literature suggests that the critical criterion for distinguishing whether a study is anthropological or not is fieldwork. (Luo *et al.*, 2005, p3). Stoking (1992) argued that fieldwork is a necessary pre-training for becoming an anthropologist and a fundamental component of the anthropologist's and anthropology's body of knowledge. In other words, if a scholar who claims to be doing anthropological research has not done fieldwork, his or her research is questionable in an anthropological sense, and even his or her identity as an anthropologist is questioned in the circle of peers.

China's use of the fieldwork method is relatively late. In 1982, Wu first published this method in a Chinese core note, and he elaborated on several requirements that need to be paid attention to in fieldwork: the investigator and the respondent have to be organically integrated, and the researcher needs to look at the problems from the participants' point of view; the information of fieldwork is often collated from observation, interviews and participation; fieldwork takes half a year to a year, and

needs to focus on special social activities, such as celebrating festivals, celebrating harvests, commemorating the ancients, worshipping ghosts and gods.

Mixed methods in anthropological ethnographic fieldwork research

Some anthropologists and sociologists (as well as research scholars in other fields) have been using mixed methods in fieldwork for at least 80 years, and several anthropological ethnographic fieldwork studies from the early 20th century onwards clearly fall within the definition of 'mixed methods' (Pelto, 2015). 1953, a comprehensive review and assessment of ethnographic research methodology was provided in *Anthropology Today: An Encyclopedic Inventory*, written under the chairmanship of A. L. Kroeber, the chapter on research methodology included the collation of qualitative data and the collection of a large amount of quantitative data. Oscar Lewis published an article in this book entitled '*Controls and Experiments in Field Work.*' His article combines quantitative data with qualitative observations and sets an example of mixed methods practice. Lewis can be considered one of the first anthropologists to seriously practice and write about "*mixed methods in field research methods*" (Pelto, 2015).

Several articles in *Method and Perspective in Anthropology*, edited by Robert F. Spencer (1954), refer to the need for researchers to make greater use of well-designed quantitative data in anthropological research. To take just one more example, Edward LeClair Jr. (1960), Director of Field Programmes at the Cornell University India Project, to assess the impact of large-scale community development projects established in different parts of India. His description in the data analysis section of the fieldwork report includes not only unstructured interviews but also: "*(1) survey schedules-structured interviews, generally made up of forced-choice questions... (2) questionnaires—very similar in content to survey schedules ... (3) interview guides-*

semi-structured interviews, characterized by open ended questions, to be administered to a number of informants in a uniform fashion..." (LeClair, 1960, p. 34)

This amply justifies Herskovits, M. J.'s (1954) stated "*'new techniques' in ethnographic fieldwork studies that we can now regard as 'development of mixed, Qual/Quan, methodology'*." All these works demonstrated the importance of mixed methods in anthropological ethnographic field research.

Application of fieldwork to the design

In 1991, the Workplace Project, a collaboration between a Chicago-based design firm called the Doblin Group and the Xerox Palo Alto Research Centre (PARC), first linked fieldwork to industrial design (Goodwin *et al.*, 1996; Suchman, 1996). 1996; Suchman, 1996). This collaboration enabled the first application of fieldwork in industrial design and provided important implications for subsequent research (Wasson and Christina, 2000). After that, Paul (1995, October) monitored 12 employee behaviours in a redesigned office using a field study. He analysed employee satisfaction before and after the design of Sit-stand adjustable furniture in the office space. Wang *et al.* (2017) helped farmers in Shijia Village, China, applied their traditional techniques and materials to the craft of making their furniture through an ethnographic fieldwork investigation methodology that encouraged villagers to reduce their dependence on external goods and services, as well as detailed how the villagers' furniture was better suited to the special lifestyle and furniture needs of the area. Additionally, in China, research on regional rural household furniture often employs a mixed-methods anthropological ethnographic fieldwork approach. For example, Wang Tong (2020) used this method to collect relevant data on kitchenware in the Yuncheng rural area; Liu (2019), similarly, applied this approach to collect both qualitative and quantitative data on the furniture environment in rural Liaonan, exploring existing issues and solutions.

Fieldwork in the design field does not need to be compared to anthropological fieldwork in social settings where social interactions are studied, especially regarding data collection time (Sperschneider *et al.*, 2003). In the design field, data collection needs to be carried out in the shortest possible time, with particular consideration for the social and cultural context. Once researchers have identified what data needs to be collected, they quickly enter the field, collect the data, and then quickly return to the studio to analyse and collate it. If necessary, additional data is then added in the field. Within the design discipline, therefore, the timetable for data collection is set by the researchers themselves.

3.4.2 Preparation for Entering the Fieldwork

Fieldwork in both anthropology and art and design requires the researcher to be prepared before stepping into the field. This includes determining of fieldwork location, contacting the field guides, making material preparations, conducting a pilot study and considering the ethics of the whole study.

Determination of fieldwork location - literature and sampling

Based on the literature and the scope of the subject study, the field research location is limited in the rural area of Jidong. The specific research village is based on sampling to ensure the validity and credibility of the data.

The scope of this research is set in the rural area of Jidong. Jidong is located in the northeastern part of Hebei Province, China, and covers the prefecture-level cities of Qinhuangdao and Tangshan within Hebei Province (Figure 1.1). In terms of topographical features, the region includes both mountainous and plain landscapes. Villages situated in mountainous areas are referred to as hilly villages, while those in

the plains are classified as plain villages. The North China Plain is predominantly composed of plain villages, with the majority of these plain villages located in Tangshan. Although there are some plain villages in the Qinhuangdao area, the region’s coastal location results in a more significant influence from the marine climate, and is mainly dominated by fishing villages. Considering the geographical conditions and the feasibility of the field research, this research chooses the Tangshan area as the primary field research location to deeply explore the characteristics and problems of rural furniture in Jidong.

In recent years, the economic level of the Tangshan region has been developing steadily, attracting more rural labourers and enriching the lives of rural people. According to China's seventh national census report, the population living in the countryside in the Tangshan region is 275,4076 (Pengpai, 2021). In 2023, the GDP of Tangshan reached 913,330-million-yuan, accounting for 20.78% of the total economic output of Hebei province (Sohu, 2024). The development of the dominant industries in the Jidong region, such as iron and steel, energy, and building materials, relies mainly on the natural mineral resources in the Tangshan area, such as iron, coal, oil, natural gas, and gold. Tangshan is the world's largest steelmaking centre, accounting for 8% of global crude steel production (Erik Hedborg, 2021). Since the 1970s, small-scale enterprises relying on the steel industry, such as coal, cement, power generation, and textiles, have grown rapidly in Tangshan. These small enterprises not only provided employment opportunities for the local rural population in Tangshan but also attracted a large number of labourers to settle in Tangshan. This has led to the steady development of Tangshan's cities and villages, as well as the continuous improvement of the living standards of Tangshan's rural residents.

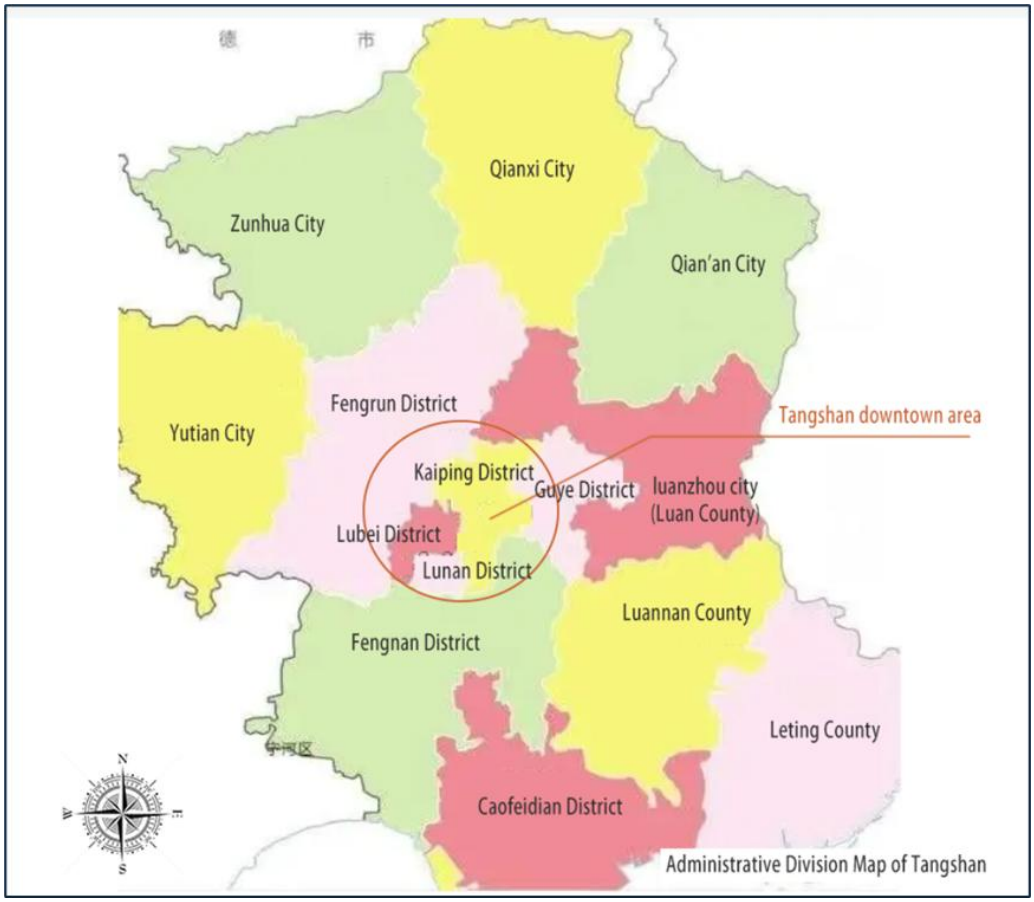


Figure 3.5 Administrative division map of Tangshan. (Adapted from Wikimedia Commons, 2022)

The Tangshan area is divided into 14 districts (Tangshan Municipal People's Government, 2023). Cities are mainly located in the centre, and rural areas are mainly located in the north and south (Figure 3.5). Among them, Lunan, Lubei, Guye, Kaiping, Fengnan, Fengrun, and Caofeidian areas have been fully urbanised, and the surrounding villages are more deeply affected by the cities. They cannot be used as samples for this research. Plains villages dominate North China, while the northern part of the Tangshan region is mostly hilly and mountainous villages (Ge, 2014). Therefore, Zunhua City, Qiangxi County, Qian'an City, and Yutian County in the northern part of Tangshan are not included in the study. The coastal areas of Leting County and Caofeidian District in the southern part of Tangshan are fishing villages and are also excluded from the study (Ge, 2014). Luanzhou City and Luannan County are located in the plains and far away from urban areas, which are the most suitable

conditions for the study. However, in September 2018, the state abolished Luanxian County and established Luanzhou City under the jurisdiction of Hebei Province (Yong *et al.*, 2021). With the support of the Chinese government, the central city of Luanzhou City has experienced rapid economic development. The villages in the north have been rapidly demolished and relocated, and only a small portion of the villages in the south, bordering Luannan County, still maintain rural living conditions, which is not quite in line with the criteria of this research. Therefore, the main area for this fieldwork was Luannan County.

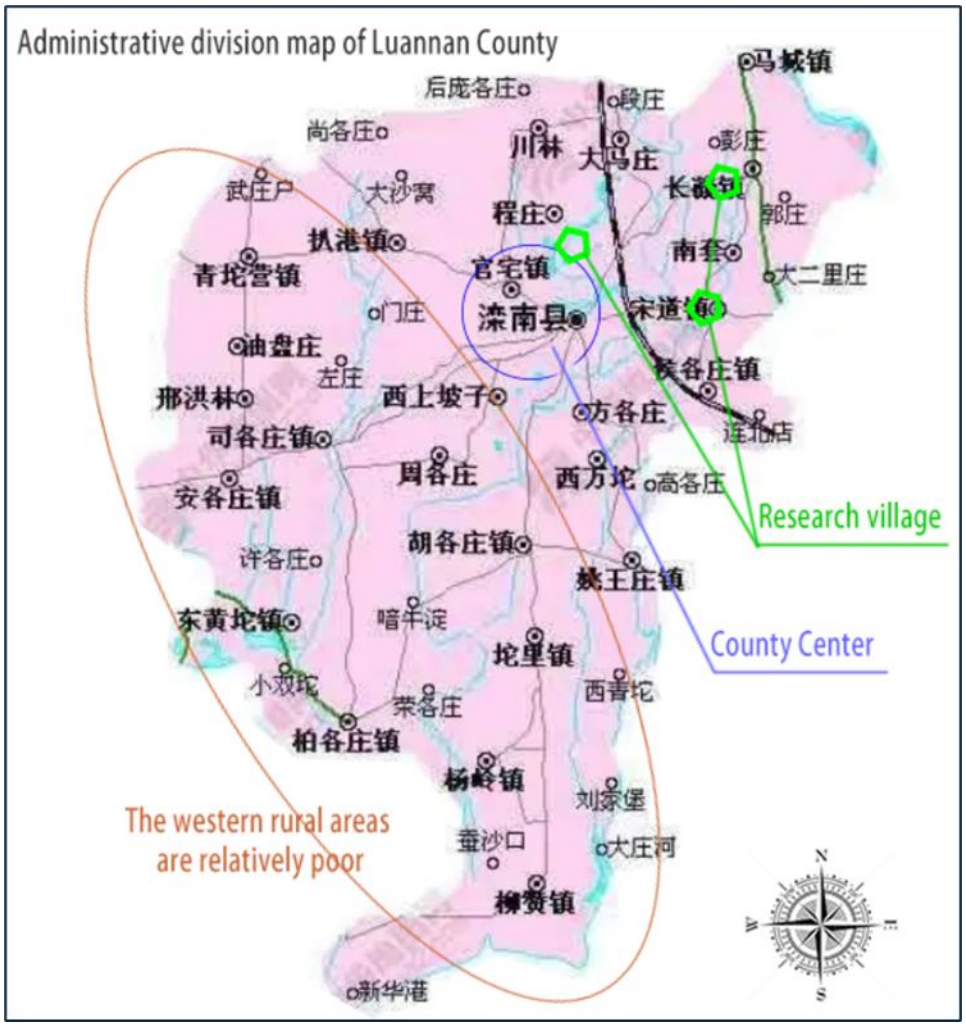


Figure 3.6 Administrative division map of Luannan County. (Adapted from The Great Valley, 2020)

The population living in villages in Luannan County is 270,898, accounting for 53.27 per cent of the total population (Official Surge of Luannan County Net Information Office, 2021). Currently, Luannan County consists of 1 street and 16 towns (Figure 3.6): Youyi Road Street, Sailing City, Songdaokou Town, Changning Town, Hugezhuang Town, TuoLi Town, Yao Wangzhuang Town, SiGeZhuang Town, AngeZhuang Town, PaChiGang Town, ChengZhuang Town, QingTuoYing Town, BaiGeZhuang Town, NanBao Town, FangGeZhuang Town, DongHuangTuo Town, and MaZhong Town (National Bureau of Statistics, 2022). The villages in the western part of Luannan County, such as Angezhuang Town, Bagezhuang Town, and Qingtuoying Town, are poor and are currently focused on meeting the basic needs of survival, which cannot be used as a sample for this research. Therefore, the towns in the central and eastern part of Luannan County are the fieldwork areas of this research, including 50 villages in Bengcheng Town, 65 villages in Songdaokou Town, 50 villages in Fanggezhuang Town, 45 villages in Changning Town, and 33 villages in Hugezhuang Town.

According to *Luannan County Record* (Local Records Compilation Committee, 2010, p155-170), compared to the villages in other towns, Songdaokou Town, Changning Town and Ben Cheng Town have been established for a long time, with a high per capita annual income and a high level of consumption by the residents. In addition, at present, with the support of the government, the villagers' houses in these three towns are being renovated (Luannan County Government, 2023). So, it can be inferred that the residents of these three villages have both the demand and the economic strength to purchase furniture. Then, the researcher selected four villages in these three towns through sampling: Fangrun Village, Qianmadi Village, Shangcaoying Village, and Dongbadu Village. There are 283 households in Qianmadi Village, 272 households in Shangcaoying Village, 265 households in Fangrun Village, and 672 households in Dongbado Village (Local Records Compilation Committee, 2010, p156-160). These four villages are the main focus for this research's field research.

Guides to enter the fieldwork

In the Chinese countryside, residents are filled with a certain degree of vigilance towards outsiders, and researchers who want to enter the field smoothly need "guides" (Tong, 2018). Ping (2003, pp. 492) stated in "*Folklore fieldwork*"**:** *"The place of local informants as guides, informants, translators and life assistants for fieldworkers to enter each other's cultures is significant. Without them, fieldwork cannot be opened, investigations cannot be carried out, and sometimes nothing is accomplished... Local informants can develop mutual trust with fieldworkers and develop a friendship-like bond. They can also help fieldworkers maintain and expand their interpersonal relationships and build an extensive network of relationships in the local area..."*

It can be seen that the guides are very important. The guides can not only help the researcher enter the field smoothly but also help the researcher expand the network of relationships in the study area and quickly establish good relationships with the people being studied. In this research, there were seven guides for the fieldwork.

The six guides identified before stepping into the field were the researcher's mother, a friend of her mother (Q92701, later referred to as: "Z" in the text) who lives in Qianmadi village, the village chief of Fangpao, the village chief of Shang Caoying, and the village chief of Donbahu. Firstly, the researcher contacted Z through the researcher's mother to explain the purpose and content of this research, and Z expressed great willingness to help the researcher access the field. Therefore, she helped the researcher to contact the village chiefs of this research village. With Z's help, the researcher organised an online meeting on 7 September 2023 to present the Participant Information Sheet (Appendix 4), Consent Form (Appendix 5) and the

research outline in detail to the village chiefs of the four villages. All of these village chiefs agreed that the conduct of this research would help promote the villages and improve the lives of the residents. As a result, they were all very willing to act as guides for this research and lead the researcher into the villages to conduct the study.

After entering the field, through the visits in the first phase of the fieldwork, the researcher became acquainted with the seventh guide: the hostess of Q92706 in Qianmadi village (later referred to in the text as: "Guide X"). She was cheerful, hospitable, and very familiar with the study villages, which played an essential role in the smooth development of the fieldwork for this research. During the latter part of the fieldwork, the researcher was with her almost every day and became the best friend. She led the researcher to visit the pre-earthquake houses (Q92716, Q92717, and Q92718) and provided in-depth recollections and explanations of the traditional furniture that existed in the pre-earthquake houses, in which she asked other villagers for clarification of what she did not understand. In addition, she informed the researcher in advance about the three families (S92906, Q92707, F92602) in the study village where the weddings were to be held and led the researcher to the three families for a site visit. With her coordination, all three families cooperated with the researcher in completing the semi-structured interviews and observations. Also, with X's help, the researcher successfully rented a house in the Qianmadi village, lived there for about four months (23 January 2024 - 1 May 2024), and collected a lot of valuable first-hand information about furniture issues and traditional furniture.

Material Preparation

Traditional and modern fieldworkers have typically prepared material before stepping into the field. This is because fieldwork is not only a stimulating and challenging academic adventure and life experience, but also a kind of humanities research with difficulties, risks, embarrassment of being suspected and attacked, and even threats to

one's life (Ping, 2003, pp. 488-490). Adequate material preparation contributes to the success of the research. Material preparation generally includes the following three areas.

Personal belongings: cash, ID cards, Passports, Driving licences. (If the researcher lives in the field for a long time, they need to prepare suitcases, clothes, covers, toiletries.)

Research tools: information for research, survey plan, schedule, field diary, observation paper, pens, mobile phones, private laptops.

Gift series: small gifts for guides and participants such as biscuits, candies, small toys, cigarettes, souvenirs.

The purpose of these material preparations is to allow the researcher to enter the survey site as quickly as possible and work smoothly.

Pilot Research

Before conducting a formal study on currently used furniture demand, the researcher needs to examine the feasibility of interview questions, anticipate the amount of information to be collected, and assess whether this information can support the entire study. Pilot studies can assist the researcher in anticipating the nature of the raw data they are about to collect (Dhaheri, 2022).

The pilot study is also a feasibility study (Tickle-Degnen, 2013). It refers to small-scale experimental and exploratory research activities conducted on a particular scale

before collecting primary data. It is a preview activity for researchers to test the feasibility of the entire research programme (Edelstein & Herbold, 2009). It can also help researchers rehearse the procedures and steps of primary data collection and understand the challenges associated with the data collection process (Janghorban *et al.*, 2014). Suppose problems with the research tools are identified in the pilot study and resolved promptly. It can ensure the fluency of the research process and the accuracy of the findings in the formal study.

The pilot study for this research focused on the semi-structured interview questions in phases three and four. Three participants were recruited through the second phase of the research. Each participant was first informed that the interview would need to be audio-recorded and would take place in the participant's home. After the participants accepted these two conditions, the researcher introduced them to the topic and objectives through the participant information sheet, helped them sign the informed consent form, and set up a time with the participants for the field interviews. All three participants in the pilot study agreed to participate.

During the formal pilot study interview, the researcher spent the first few minutes in general small talk, by Chinese cultural etiquette. The researcher then began the interview with the participant's consent. In the interview, the researcher informed the participants that they could pause this activity at any time and had the right to terminate the interview without providing the reason (Salkind, 2010).

The researcher thematically analysed all the data collected from the semi-structured interviews in the pilot study using NVivo[11]. This result was also arranged as three cases in the formal study. Based on the pilot test, the researcher made some changes

[11] NVivo is a software package designed for thematical analysis.

to some of the interview questions, and the updated interview outline was used to collect primary data for this research.

Ethical consideration

Prior to the commencement of this research, an Ethical Approval Form (Appendix 2) was submitted to the UWTSD Ethics Committee for approval. Therefore, this research was conducted in accordance with ethical and moral standards.

All participants in this research signed a participant contract and informed consent form. The researcher ensured that all participants understood the study. Prior to interviews and observations, the researcher confirmed each participant's willingness (or unwillingness) to participate in this research.

Ethical approval was particularly important in this research because the researcher was required to visit the participants' homes to document their lives. This requires that the participant's right to privacy is fully assured. Participants' consent was sought for the publication of photographs, videos, written materials, with information about their families and personal information coded and pictures blurred in the published materials. The researcher also needs to use reasonable storage means to ensure that the data is not disclosed and that the specific ways are described in detail in the Ethical Approval Form (Appendix 2).

3.5 Fieldwork Process

According to the research questions, the fieldwork was divided into five phases, each addressing different issues, reaching different goals, and using different tools (Table 3.2). The second phase was conducted after the first phase. The third, fourth and fifth

phases were parallel types where the data were collected simultaneously, and conducted after the second phase. Regarding the data type, the data in phases I, II, III, and IV were qualitative, and the data in phase V were quantitative.

3.5.1 discussed the research tools used in this fieldwork. 3.5.2 to 3.5.6 described in detail the objectives of each phase, participant information, data to be collected, how the data be analysed.

Table 3.2 Process map explaining logic of each phase

Objectives of each phase	**sub-objectives of each phase**	**Research tools**	**Research location**
Phase One: environment, lifestyle, and yards of the villages	The overall environment of the villages	Field journals	Fangpao Village、Qianmadi Village、Shangcaoying Village、Dongbahu Village
	Contents of the rural household lifestyle	Field journals and literature	
	Layout of the family yards	Photographs (30 yards)	
Phase Two: background of currently used furniture and traditional furniture in villages	Types and layout of currently used furniture	Photographs (63 houses)	
	Types of traditional furniture	Field journals (forming diagrams)	
		Photographs (roughly 100)	
		Unstructured interviews (45 persons)	
Phase Three: the problems and demands of currently used furniture in daily lifestyle	Single-story, three-space house (Type A)	Semi-structured interviews (10 persons)	
		Field journals (28 families)	
		Participant observation (2 families, 6 days)	
	Single-story, multi-space house (Type B)	Semi-structured interviews (10 persons)	
		Field journals (30 families)	
		Participant observation (2 families, 6 days)	
Phase Four: the problems and demands of currently used furniture in special lifestyle	Traditional Folklore Events at Home: Weddings	Semi-structured interviews (5 persons)	
		Non-participant observation and participant observation (4 families, 12 days)	
	Traditional folklore events at home: New Year's	Semi-structured interviews (6 persons)	
		Participant observation (1 families, 4 days)	
	Problems with furniture in the home-based production	Semi-structured interviews (18 persons)	
		Participant observation (18 home-based production scenarios)	
Phase Five: Questionnaire survey on household furniture preferences in Jidong rural	Villagers' preferences for furniture	203 questionnaires	

3.5.1 Fieldwork Research Tools

In this research, all interviews and observations were conducted in the field environment, primarily using direct observation and on-site interview methods. Direct observation included participant observation and non-participant observation. On-site interviews included unstructured interviews and semi-structured interviews. Observations were recorded in writing to form observation notes, while interviews were recorded on mobile phones and transcribed into text. In addition, during the research, the researcher lived in the field, with conversations with villagers about furniture issues or observations of villagers' currently used furniture captured in daily field notes. The researcher also took numerous photos of furniture using their mobile phone to assist in analysing interview texts, observation notes, and field notes.

Participant observation and non-participant observation

Participant observation has had a long and tortuous history in the social sciences. It has been used in various forms by scholars from different disciplines. Hammersley and Atkinson (1983) argued that, in a sense, all social research is a form of participant observation because the researcher cannot study the social world without becoming part of it. Atkinson *et al.* (1998) argued that 'participant observation' is the most important research methodology in ethnography and that the generation of field reports is largely or partly dependent on 'participant observation'. In the field of design, Wasson and Christina (2000) asserted that participant observation is a fundamental method for gaining insights into user behaviour and is used to understand how people use products in their daily lives. Researchers usually spend two to five days observing and recording user behaviour in different environments and collecting data.

Participant observation was used almost throughout the study, and all the observation notes and field notes were recorded with the help of the observation method, especially in phases three and four. This can not only make up for the wrong data caused by the researcher's recall bias and the distortion of the interview data but also allow the researcher to participate in the lives of the participants and interpret the furniture problem comprehensively.

Unlike participant observation, non-participant observers are not involved in any interpersonal interaction in the field. Ciesielska *et al.* (2018, p40) argued that in non-participant observation field operations, the researcher, as an outsider, could collect more comprehensive data without being involved in the participants' activities. In the fourth phase of this research, the wedding day of four families, the researcher placed herself as an outsider and observed different types of people using the furniture during the wedding (e.g. guests observing the ceremony, a newlywed couple, the owner of the residence), which resulted in a higher degree of completeness of the data collected.

Whether the participant or non-participant observation, there needs to be a clear primary goal of the observation before entering the field. When recording information about participant observation in the field, it is important to pay attention to the details of the participants' behaviour, e.g. participants' feelings, reactions, voices, initial impressions. The researcher needs to be constantly reminded that the notes recorded are centred on the theme and questions of the study (Ciesielska *et al.*, 2018). At the post-processing data stage, in-depth thematic analyses are required for the data collected from observations, which are used to understand and analyse more abstract issues (Laurier, 2010).

In this research, many participants strongly refused to use electronic devices to record their daily lives, and handwritten observation notes became the primary recording method for this research. However, handwritten observation notes may be subject to researcher subjectivity and bias. To address this issue, the data for this research's third and fourth phases were formed from a combination of observations and interviews, respectively. The interview data, obtained through mobile phone recordings, directly represents the participants' perceptions and experiences, thus compensating for the subjectivity and bias of the researcher and providing more comprehensive and accurate research results.

Semi-structured interviews and unstructured interviews

Ping (2003, p.495) argued that the direct interview method is very important in fieldwork. It is divided into structured interviews, semi-structured interviews, and unstructured interviews. This research used semi-structured and unstructured interviews.

In contrast to structured interviews with purely closed questions, semi-structured interviews usually use a mixture of closed and open-ended questions, with closed questions usually accompanied by open-ended 'why' or 'how' questions (Adams, 2015). This retains a degree of structure whilst allowing the researcher to raise new questions or ideas during the dialogue based on the interviewee's words. In this research, semi-structured interviews were used three times depending on the direction of the research question. The first time was to understand the problems that occur with furniture in daily life in the house. The second and third time was to understand the problems arising from furniture in special life. Unstructured interviews can help the researcher explore the perceptions and opinions of respondents on household furniture in different lifestyles and even provide some answers to furniture problems.

The practical steps of a semi-structured interview are generally selecting and recruiting respondents, drafting questions and an interview guide, and analysing the information collected (Adams, 2015). In this research, the researcher created three different interview outlines for interviewees, as the questions to be researched at each stage differed. Regarding question setting, the questions set by the researcher were flexible, and participants were free to comment, share their experiences and express their views. This interview format can inspire interviewees to provide unexpected insights (Thomas-Walters, 2022). When operating in the field, the researcher did not provide the participants with the interview outline in advance, which allowed for an understanding of the participants' real thoughts rather than pre-conceived answers.

This research used unstructured interviews regarding traditional furniture in the second phase. Because the researcher needed to understand the traditional furniture from the villagers' point of view, unstructured interviews were undoubtedly the most suitable. Secondly, the researcher did not know much about the traditional furniture in the study villages before stepping into the field. For example, does every household have the same traditional furniture? What are the types and quantities of traditional furniture? Is this furniture currently in use, and how is it made? How many participants were willing to be interviewed? Since the information was too fragmented to form a complete interview outline, the researcher went straight into the field with the direction of "collecting information on traditional furniture".

The interview data were recorded in various ways. Handwritten notes are the traditional method of obtaining interview data. However, handwritten notes are likely to disrupt the natural flow of the conversation (Zhang *et al.*, 2009, p. 243). Therefore, in this research, the researcher used mobile phone recordings to ensure that all discussions were recorded, facilitating repeated listening during subsequent data

analysis, and that no important information was missing due to the researcher's omissions or subjective awareness.

It is worth noting that both Denzin (1989) and Barriball (1994) believed that the validity and reliability of the interview data depend on the similarity of the meaning of the utterances or words conveyed by each participant rather than on the repetition of the same words in each answer. Therefore, when analysing the data, it is impossible to simply analyse the repetition rate of words. However, the researcher needs to analyse the meaning of sentences or paragraphs to ensure the reliability and validity of the study.

Field note

The field note is a collection of notes taken by a researcher to remember observed behaviours, activities, events, and other characteristics during a field study. Recorded notes are intended to be read by the researcher as evidence for generating meaning and understanding of the culture, social situation, or phenomenon being studied (University of Southern California, 2024). In this research, unlike observation notes that have a clear limitation of objectives and a limitation of observation time. Field notes do not have time constraints and can be recorded daily from when the researcher enters the field. Field notes also do not have fairly explicit goals; any information that fits the current state of the furniture in this research can be recorded.

Clifford (1990, p. 68) considered field notes derived from interlocution, narration, and rewriting. In this research, field notes were recorded by the researcher in the village, either in the form of notes or photographs, documenting daily activities related to household furniture and significant dialogues between the researcher and villagers. There are a total of three parts of field notes in this research. The first part consists of

discussions among villagers regarding rural lifestyle, primarily recorded during the initial field research phase. The second part of the field notes is about the graphical organisation of the dimensions of the traditional furniture, which were primarily recorded in the second phase of the field research. The third part of the field notes consisted of complaints about furniture usage in daily life or special activities, mostly recorded during the third phase of the field research.

Table 3.3 Template for field note (Adapted from Chiseri-Strater and Sunstein ,1997 & Schwandt *et al.*,2015)

Description
Date:
Site/location:
Length of Observation:
Participants (list names):
Activity (explain in detail):
Types of notes: sketches, diagrams, other drawings and photographs (Canfield, 2011).
Pay attention to: repetitive phrases, dialogues, the villagers use furniture behaviours.
Reflection
Explaining the phenomenon, problems, ideas, concerns, reflections

Regarding the specific content that needs to be recorded in the field note, Chiseri-Strater and Sunstein (1997) listed what should be included in a field note: date, time, and place of observation; specific facts, figures, and details of what happened in the field; specific words, phrases, and dialogues spoken by the participants; questions about the people or behaviours in the field; and the observer's sensory impressions, which include sight, hearing, texture, smell, and taste. Schwandt *et al.* (2015) further

classified field notes into descriptive information, which records objective details such as time, place, and activities, and reflective information, which captures the researcher's thoughts and interpretations. To mitigate researcher bias and enhance credibility, a reflexivity journal was maintained alongside field notes, allowing for self-examination of potential biases and analytical reflections. Combining these frameworks, the researcher developed a structured field note template for this study (Table 3.3), and Appendix 7 provides an example of field notes, including both descriptive and reflective notes.

Regarding dealing with field notes, according to Schwandt (2015), the researcher must add additional details as soon as possible after the researcher completes the field task each day. Otherwise, essential facts and the opportunity to fully interpret the data may be lost. In this research, after completing each day of fieldwork, the researcher would review and collate the field notes each evening, organising each day's paper notes into an electronic version to be stored in Word on a personal computer.

Photographs

Ping (2003, pp.521) described the camera as a very important equipment in fieldwork, searching for photographic material to supplement audio recordings, observation notes and field notes. Wasson *et al.* (2000) allowed consumers to record their day-to-day interactions with the research product using a camera in analysing the field design practices of E-Lab (now part of Sapient Corporation). The researchers also guided consumers to organise the photographs into coherent narratives to explain the story behind the user's behaviour. Sontag (1978, p. 180) writes in *on photography*: "*But the force of photographic images comes from their being material realities in their own right, richly informative deposits left in the wake of whatever emitted them, potent means for turning the tables on reality - for turning it into a shadow. Images are more real than anyone could have supposed.* " (Harrison et al, 2002)

It emphasises the objectivity and authenticity of photographs. In contrast to the subjective interpretations that may accompany textual records, photographs capture objective images and facts. In this research, the researcher took many photographs of yards in the first phase. In the second phase, the researcher captured photographs of traditional furniture and the types and layouts of currently used furniture in 63 families. The photographs in the third and fourth phases focused on the villagers' living lifestyles and how villagers use furniture. Presenting the recorded objects or scenes through images allows researchers to better understand the data from field notes and observation notes. In the later stages of data analysis, all the photographs from this research were imported into Word for classification and descriptive analysis.

Questionnaire

The questionnaire survey, as a quantitative data collection method, differs from the narrative data generated by qualitative research. Quantitative data is analysed using statistical methods in numerical form (Creswell, 2014). In terms of questionnaire design, Dhaheri (2002) suggests that researchers should clearly define the data themes to be collected and ensure that the questionnaire is designed to be concise, clear, and well-structured, with a good logical flow and format, in order to increase the response rate. In this research, the data collected through the questionnaire survey aims to validate and supplement the findings from the earlier qualitative research, providing a deeper understanding of the furniture preferences of rural residents in Jidong, and offering a foundation for the final design principles.

3.5.2 Phase One

The first phase of the fieldwork was conducted to understand the content of the household lifestyle and the types of household yards in the study villages, and to

answer a part of the research questions on the background of the current state of Jidong rural household furniture. Table 3.4 shows the basic information of the first phase of the fieldwork.

Table 3.4 Information sheet for the first phase of the fieldwork.

Village	Time	Guides	Recording tool
Fangpao Village	15.09.2023, full day	Village Chief of Fangpao	Field Journal (Handwritten) Mobile phone photographs
Qianmadi Village	20.09.2023, full day	Mother's friend, (Q92701, guide "Z")	
Shangcaoying Village	22.09.2023, half-day	Village Chief of Shangcaoying	
Dongbahu Village	25.09.2023, full day	Village Chief of Dongbahu	

The overall duration of Phase I: 15 September 2023 - 25 September 2023

The tasks in Phase I:

(1) To understand the overall environment of the four villages and the content of the rural household lifestyles from the researcher's observations and conversations with the villagers to form the field notes.

(2) To visit the villagers' yards led by the guides and photograph the yards of the participants who were willing for photographs to be taken.

(3) Chat with the villagers as much as possible and quickly become familiar with them to facilitate the progress of the study.

The data from this phase consisted of two main parts: the field notes of the current lifestyles of the villages and the photographs of the yards of the 30 families recorded with mobile phones.

In the data analysis section, regarding the collected photo data, the researcher conducted descriptive analysis directly in Word and created different types of yard layout diagrams in Photoshop. As for the field notes, the researcher learned from conversations with the village chief of Shangcaoying during the survey that the book "*Luannan County Record*" (Luannan County Government, 2023) describes the Luannan lifestyle. Therefore, in analysing the field note data, the researcher combined data with the information from this book to compensate for the lack of data on lifestyle observations. This approach also allows for comparisons between the field-collected data and the "*Luannan County Record*" descriptions to identify similarities and differences.

3.5.3 Phase Two

This phase answers research questions about traditional furniture and the status (types and layouts) of currently used furniture in rural Jidong. In this phase, guides were needed to lead the researcher into the villagers' homes to take pictures of the furniture to understand the basic situation of the current household furniture. Interviewees for Phase 3 and Phase 4 can also be recruited.

The overall duration of Phase 2: 25th September 2023 - 30th September 2023

The tasks in Phase 2:

(1) Types of currently used furniture.

(2) The status of spatial layout of currently used furniture.

(3) Research the condition of traditional furniture in the villages.

(4) Identify people who could participate in the interviews.

(5) To identify families who had recently held weddings and to contact these families.

Table 3.5 Information sheet for the second phase of the fieldwork.

Village	**Date; Duration**	**Guides**	**Cases -- Families visited**
Fangpao Village	26.09.2023, full day	Village Chief of Fangpao, Guide "X"	F92601，F92602，F92603，F92604，F92605，F92606，F92607，F92608，F92609，F92610，10 families in total.
Qianmadi Village	27.09.2023, full day	Guide "Z", Guide "X"	Q92701，Q92702，Q92703，Q92704，Q92705，Q92706，Q92707，Q92708，Q92709，Q92710，Q92711，Q92712，Q92713，Q92714，Q92715，Q92716，Q92717，Q92718，18 families in total.
Shangcaoying Village	29.09.2023, full day	Village Chief of Shangcaoying, Guide "X"	S92901，S92902，S92903，S92904，S92905，S92906，S92907，S92908，S92909，S92910，S92911，S92912，S92913，S92914，S92915，S92916，S92917，S92918，S92919，19 families in total.
Dongbahu Village	30.09.2023, full day	Village Chief of Dongbahu Guide "X"	D93001，D93002，D93003，D93004，D93005，D93006，D93007，D93008，D93009，D93010，D93011，D93012，D93013，D93014，D93015，D93016，16 families in total.

During the field research, the villagers were enthusiastic and did not resent the researcher taking photographs. The original research plan was to collect information on the furniture of 60 families, but 63 houses were eventually visited (Table 3.5). The researcher numbered all the households visited by the village's initials and the time of the current research phase. The interviewees and observed households in the third and fourth phases were from the households in Table 3.5.

For the status of traditional furniture, the researcher conducted unstructured field interviews via mobile phone recordings in the research villages. Before the fieldwork, the number of participants was not limited because it was not known precisely which households in the villages currently still had traditional furniture.

During the research period, participants were family members with traditional furniture. Interview questions were developed gradually during the research. For example: could you tell me about this furniture? How is this furniture made? Was it bought? What kind of wood is it made of? What is the story? Could I measure this piece of furniture? In the end, 45 audio recordings of 10-30 minutes were collected. The researcher also took photographs of traditional furniture, measured the dimensions of traditional furniture with a tape measure, and recorded field notes.

As a result, three data types were developed in this research phase: photographic data, unstructured interview data and field notes. The photographic data consisted of types and layouts of currently used furniture, and types of traditional furniture. In processing this photo data section, as in the first phase, the researcher imported the photos into Word for descriptive analysis and Photoshop for drawing furniture layout diagrams. The second was audio recordings of traditional furniture from open-ended interviews, which the researcher converted into Word text and analysed the characteristics of each piece of traditional furniture. The third type of field note was mainly used to describe and map the dimensions of the traditional and currently used furniture, supplemented by the interviews and photographs data.

3.5.4 Phase Three

The third phase of the fieldwork was designed to answer the research question: What problems have arisen in currently used furniture in the daily lifestyle of rural Jidong?

The overall duration of Phase 3: 1st October 2023 - 1st Aug 2024. In this phase, to gain a deeper understanding, integrate into the villagers' lives, and record field notes, the researcher, accompanied by her mother, rented a house and lived in Qianmadi Village from 23rd January, 2024 - 1st May, 2024. with the help of Guide X.

The task in Phase 3: To collect data on problems with currently used furniture that occur in daily life. The data analysis in the first and second phases found that residential-type houses in the villages were classified into single-story, three-space houses (Type A houses) and single-story, multi-space houses (Type B houses). The Type and layout of furniture in different houses were not quite the same, so this phase was needed to collect the problems arising from currently used furniture in both house types.

Table 3.6 Semi-structured Interview Information Sheet for third phase of the Fieldwork

	Household	Date	Interviewee	Type of house	Duration	Recording tool
1	F92607	04.10.2023 （Pilot）	Female master	Type A house	63 min.	Recording (mobile phone)
2	F92610	17.12.2023	Female master	Type B house	77 min.	
3	Q92710	12.01.2024	Female master	Type A house	87 min.	
4	Q92711	04.02.2024	Female master	Type B house	90 min.	
5	Q92712	19.02.2024	Male master	Type A house	75 min.	
6	Q92715	23.02.2024	Female master	Type B house	85 min.	
7	S92901	26.02.2024	Female master	Type B house	82 min.	
8	S92903	12.03.2024	Female master	Type B house	69 min.	
9	D93006	12.03.2024	Male master	Type B house	50 min.	
10	D93011	13.03.2024	Male master	Type A house	71 min.	
11	F92603	01.04.2024	Male master	Type A house	50 min.	
12	F92606	01.04.2024	Male master	Type A house	55 min.	
13	D93001	03.04.2024	Female master	Type A house	82 min.	
14	D93004	03.04.2024	Male master	Type A house	60 min.	
15	S92915	03.04.2024	Female master	Type A house	75 min.	
16	Q92708	04.04.2024	Female master	Type A house	84 min.	
17	D93008	04.04.2024	Female master	Type B house	87 min.	
18	D93012	07.04.2024	Female master	Type B house	83 min.	
19	D93003	07.04.2024	Female master	Type B house	57 min.	
20	S92912	07.04.2024	Female master	Type B house	60 min.	

There are three main sources of data at this phase, semi-structured interviews, participant observation, and field records. The first to begin was semi-structured interviews, which were conducted in the interviewees' homes. The researcher interviewed the heads or masters of 20 households (10 Type A houses and 10 Type B houses) from the four villages for varying periods ranging from 50 to 90 minutes (Table 3.6). Table 3.7 shows the questions of the semi-structured interviews. The

interview data were recorded on mobile phones and then transferred to the researcher's computer.

Table 3.7 Outline of Semi-structured interviews for third phase of the Fieldwork

Semi-structure interview outline: (Daily life)
1. Could you tell me a little bit about your day? From waking up in the morning to going to bed at night? 2. What furniture do you use every day in your bedroom? What items of furniture do you have and how is each piece of furniture used? 3. What kind of furniture do you use every day in the hall (living room)? (What items of furniture do you have and how is each piece of furniture used?) 4. Could you tell me the most difficult piece of furniture in your house? (Why is it hard to use? How often do you use it?) 5. Could you tell me the most easy-to-use piece of furniture in your house? (Why is it easy to use? How many times a day do you use it?) 6. How often do you buy furniture for your home? Could you tell us about the furniture you buy the most? (e.g., bed, sofa, chair, cabinet, dinner table, or other, please tell me why did you buy it? When did you buy it?) What furniture do you plan to purchase in the future? 7. When visitors come, which space do you choose to welcome them in the house? Typically, how long do you spend there? Could you describe the scene? 8. Have you ever made your own furniture? If so, give an example. Why do you make your own furniture? (e.g., specific needs, customization to fit space), Could you show me the process? 9. Have you ever reassembled your furniture? If so, by yourself or pay someone else to do it? Why? Do you have the right tools to do that? Difficulties? Yes, please give an example:

Second is the participant observation. Initially, the researcher wanted to record by installing cameras, but all three families explicitly refused due to fear of privacy breaches. The researcher, therefore, personally conducted participant observation in each home for three consecutive days (Table 3.8). During the observation period, the researcher stayed in the participants' homes throughout the day to observe their behaviour in using the furniture in their daily lives, culminating in handwritten observation notes.

Table 3.8 Participant Observation Information Sheet for third phase of the Fieldwork

Household	Type of house	Household size	Date	Participants in Observations	Recording tool
Q92711	Type B house	5	15.05.2024, full day 16.05.2024, full day 17.05.2024, full day	All family members, including the female master, the male master, the son, the daughter, the son-in-law, the daughter-in-law, the children who are already in junior high school and high school, and seniors. Members outside the family: neighbours, relatives.	Observation notes (handwritten) Photographs (mobile phone)
F92607	Type A house	2	20.05.2024, full day 21.05.2024, full day 22.05.2024, full day		
Q92715	Type B house	6	30.05.2024, full day 31.06.2024, full day 01.06.2024, full day		
D93015	Type A house	3	04.06.2024, full day 05.06.2024, full day 06.06.2024, full day		

In terms of field notes, notes were recorded from 23 January 2024 to 1 May 2024, when the researcher lived in the study village. During this period, excluding the time spent on collating data daily, the researcher had daily access to the villagers in the village. During the daily chats and observations with the villagers, there were complaints about furniture, and the behaviours of currently used furniture were recorded. Eventually, 28 Type A houses and 30 Type B houses of field notes on currently used furniture issues in daily life were compiled, which greatly supplemented part of the interview and observation data.

In the data analysis part, the researcher first combined semi-structured interviews and field notes in NVivo for thematic analysis. Secondly, the observation records were also analysed in NVivo.

3.5.5 Phase Four

The fourth phase of the fieldwork was to answer the research question: What problems have arisen in currently used furniture in the special lifestyle of rural Jidong?

The overall duration of Phase 4: 1st October 2023 - 1st Aug 2024.

The task in Phase 4: To collect the problems in the special life when villagers in the Jidong countryside use household furniture. Two types of special lifestyles were found in the first and second phases: the villagers organised folklore activities in their homes, and the villagers carried out home-based production in their houses. Different lifestyles create different requirements for currently used furniture, so this phase needs to explore the problems that arise for currently used furniture in these two special lifestyles.

Folklore events organised by villagers at home

Based on the analysis of the content of folklore events in village homes in the first phase, two types of folklore events organised at home that occur with high frequency in the study villages were selected for this phase: weddings and New Year. The primary purpose is to discover the common problems of furniture in organising different folklore events.

Wedding:

Table 3.9 Information Sheet for Interview and Observation Data on Wedding Aspects of Fieldwork Phase 4

Household	Interview Date	Wedding Date	Interviewee	Recording tool	Observation Date	Duration of observation	Subjects of Observation	Recording tool
S92906	03.10.2023 （Pilot）	01.11.2023	Female master	Recording (mobile phone)	31.10.2023	7.am-10.pm	Married couple, the male or female master, the people moving around indoors.	Observation notes (handwritten) Photographs (mobile phone)
					01.11.2023	5.am-11.pm		
					02.11.2023	7.am-10.pm		
Q92707	24.03.2024	22.11.2023	Female master		21.11.2023	7.am-10.pm		
					22.11.2023	4.am-9.pm		
					23.11.2023	7.am-10.pm		
F92602	24.03.2024	13.12.2023	Female master, male master		12.12.2023	7.am-10.pm		
					13.12.2023	4.am-9.pm		
					14.12.2023	6.am-10.pm		
S92911	26.03.2024	28.12.2023	Female master		27.12.2023	7.am-10.pm		
					28.12.2023	6.am-11.pm		
					29.12.2023	7.am-10.pm		

To understand the problems and needs for currently used furniture arising from weddings organised at home by villagers, the researcher collected data from four families who organised weddings. This data included non-participant observation on the wedding day, participant observation the day before and the day after the wedding was organised, and semi-structured interviews with the fathers or mothers of the newly married husbands.

Semi-structured interviews (Table 3.9): Before formal data collection, guide X led the researcher to four wedding families for an advance visit, during which the researcher would ask the wedding organisers if they were available to be interviewed. Among them, only the hostess of S92906 was willing to be interviewed before the wedding, while the other families were interviewed after the wedding. The number of families interviewed was four, but the number of people interviewed was five because the researcher interviewed the male and female hosts of F92602 separately. The duration of each interview ranged from 50-90 minutes. Mobile phone audio recordings recorded the data from the interviews.

Participant and non-participant observation (Table 3.9): The researcher personally conducted observation in each household for three consecutive days. One of the days before and one day after the wedding were participant observation. The researcher, as a participant, helped the villagers organising the wedding to pack up the house together, which allowed the researcher to get a direct insight into the problem of currently used furniture. Non-participant observation was used on the day of the wedding. This was mainly because of the chaotic situation at the time of the wedding, and the researcher needed to observe as a bystander all types of people that attending the wedding and their use of household furniture. The data from this section were handwritten and recorded by the researcher to form participant and non-participant observation notes, respectively.

New Year:

Table 3.10 Information Sheet for Interview and Observation Data on New Year Aspects of Fieldwork Phase 4

Interview Household	Interview Date	Interviewee	Recording tool	Observation Household	Subjects of Observation	Duration of observation	Recording tool
F92604	19.03.2024	Female master	Recording (mobile phone)	Q92706	Male or female residence owners, daughter, son-in-law, son, daughter-in-law, guest.	08.02.2024 09.02.2024 10.02.2024 11.02.2024 Total 4 days	Observation notes (handwritten) Photographs (mobile phone)
Q92701	19.03.2024	Female master					
Q92702	25.03.2024	Male master					
Q92709	25.03.2024	Female master					
S92914	26.03.2024	Female master					
D93013	26.03.2024	Male master					

Table 3.11 Outline of Semi-structured Interviews for folklore activities in phase 4 of the fieldwork

Semi-structure interview outline: (Special Lifestyle- Wedding/ New Year)

1. Please describe the process of holding a wedding/celebrating Chinese New Year. (only indoors)
2. Please list furniture you use for traditional festivals. (You can list more than one piece of furniture or decorations) (Which pieces of furniture do you find the most difficult to use? Which furniture is best to use? Why?)
3. Could you describe how the furniture just mentioned is used in a wedding? Have you ever had any problems with furniture during a wedding? How did you deal with those problems?
4. What furniture do you think works well?
5. Do you move your furniture before the wedding? If so, please tell me how you moved it? (How easy was it to move? How easy to store it? How easy is it to bring it back to the original place? Etc.)
6. When the wedding is over, will there be questions about the furniture? (e.g. storage of kitchenware, storage of tables, chairs and benches, cleaning of the room, etc.) Why do these problems occur? How did you deal with those problems?

To understand the problems and needs of currently used furniture when Jidong villagers have a New Year's Eve at home. The researcher conducted semi-structured interviews with six heads or masters of the family who celebrated the New Year at home, and participant observation in one family (Table 3.10; Table 3.11). Participant observation was conducted over four days, including the day before the New Year,

the day of the New Year and two days after the New Year. Subjects of observation included male and female residence owners, daughters and daughters-in-law, sons and sons-in-law, and guests. Data from the observations were presented in handwritten observation notes.

In the data analysis section, data from semi-structured interviews, participant observation, and non-participant observation of folklore events (including weddings and New Year) were integrated into NVivo for thematic analysis.

Home-based production organised by villagers

This phase was to answer the research question: What problems and needs arise from the villagers' currently used furniture during home-based production? Based on the analysed of the types of village dwellings in Phase 1 and Phase 2, the researcher selected different types of production dwellings in the study villages, including 8 village shops, 2 mahjong parlours and 8 processing factories. (Table 3.12). The primary purpose was to discover the furniture problems in the production space.

The researcher conducted semi-structured interviews and participant observation for 18 households of different production types (Table 3.12). The participants in the interviews consisted mainly of the owner or works. Table 3.13 showed the outline of the semi-structured interviews at this phase. In the observation section, three observations were conducted on the same day of the interview for a shorter period because some participants wanted to avoid receiving the researcher for secondary fieldwork. The other observations were longer, one day or half a day. In addition, the persons observed include not only the owner of the shop or factory, but also customers, workers, neighbours.

Table 3.12 Information Sheet on Interview and Observation Data on Production Aspects of Fieldwork Phase 4

Type of house	Interview Household	Interview Date	Interviewee	Duration of Observation	Subjects of Observation	Recording tool
Village shops	F92601	4.10.2023 （Pilot）	shop owner	01.04.2024 10.am-4.pm	Shopkeepers, shop assistants, customers, neighbours	Interviews: Recording (mobile phone) Observation notes：(handwritten) Photographs (mobile phone)
	Q92704	08.06.2024	Shop worker	11.am-11.30am		
	Q92713	08.06.2024	Shop owner	21.06.2024 5.am-5.pm		
	Q92714	10.06.2024	Shop owner	9.am-10.am		
	S92916	10.06.2024	Shop owner	20.06.2024 6.am-11.am		
	S92917	11.06.2024	Shop owner	10.am-12am		
	S92919	11.06.2024	Shop worker	23.06.2024 9.am-3.pm		
	D93005	12.06.2024	Shop worker	25.06.2024 1.pm-10.pm		
Mahjong parlous	D93016	12.06.2024	Owner	27.06.2024 8.am-7.pm	Owners and customers	
	S92908	15.06.2024	Owner	28.06.2024 8.am-4.pm		
Sheet metal workshop	F92605	16.06.2024	Owner	30.06.2024 10.am-5.pm	Factory owners, workers, neighbours	
	D93003	17.06.2024	Owner	03.07.2024 7.am-12.am		
	D93002	17.06.2024	Owner	03.07.2024 1.pm-7.pm		
Animal breeding factory	D93004	17.06.2024	Owner	07.07.2024 10.am-4.pm		
	D93001	17.06.2024	Owner	10.07.2024 5.am-10.am		
	D93010	18.06.2024	Owner	10.07.2024 2.pm-10.pm		
Vegetable shed factory	D93012	18.06.2024	Owner	14.07.2024 10.am-3.pm		
Breakfast processing factory	S92909	20.06.2024	Owner	4.pm-5.pm		

Table 3.13 Outline of Semi-structured Interviews for Home-based in Phase 5 of the Fieldwork

Semi-structure interview outline: (Special Lifestyle- Production)

1. Do you undertake any form of home production?
2. What type of home production are you performing at home right now? (Home farming, home shop, or something else?)
3. Could you show me around your production process? How long do you work? Do you have a break in between?
4. Does this mode of production affect your use of furniture? (How does it affect? Has it caused any damage? Do you have any specific demands on furniture?)
5. How do you use furniture in your work? (When you are producing, what furniture is the most uncomfortable (or comfortable) for you to use? The most tiring or easy to use?)
6. What part of the furniture do you think needs the most change or adaptation when you produce? Why? Do you have an idea of how to change this?

In the data analysis section, the data from the semi-structured interviews and participant observation were integrated and then thematically analysed in NVivo to find out the problems of currently used furniture in different home-based production activities of the villagers.

3.5.6 Phase Five

The questionnaire survey in this phase focused on the furniture preferences of rural villagers in Jidong, aiming to supplement the findings on function, material, and decoration in the earlier phase, and to gain a more in-depth understanding of the self-requirements of villagers in Jidong in the household furniture. This phase sought to provide a more accurate answer to the third research question (design principles).

The questionnaire consisted of three main sections: The first section gathered basic demographic information of the villagers, the second section investigated the current usage and purchasing preferences for furniture, and the third section analysed furniture styles and preferences. Specifically, the questionnaire covered the following content:

Basic Information Section (Questions 1-6): This section included demographic details such as gender, age, height, household members, income sources, and monthly family income (Appendix 3).

Analysis of Furniture Usage and Purchasing Factors (Questions 7-12): This section analysed the most commonly used furniture spaces in daily life, and analysed the convenience of current furniture uses through scale questions. It also investigated the factors influencing villagers' decisions to purchase new furniture in different contexts, including internal needs and external influences, ranked by importance (Appendix 3).

Furniture Styles and Preference Analysis (Questions 13-21): Using single-choice questions, this section explored villagers' style preferences for the overall space of their home, as well as furniture preferences for individual spaces (such as the bedroom, living room, kitchen, etc.), including items like beds, bedroom seating, wardrobes, sofas, dining tables, benches, shoe cabinets, and cupboards (Appendix 3).

For this phase, the researcher conducted on-site distribution and collection of questionnaires from March 1, 2024, to Sep 1, 2024, across four study villages. A total of 232 questionnaires were distributed, with 203 valid responses collected. The data were subsequently analysed through descriptive statistics and cross-tabulation analysis using SPSS, with the findings reported in Chapter 7. This provided significant quantitative data to support the discussions in subsequent chapters.

3.6 Summary

This chapter describes the field research conducted under the interpretive paradigm using a mixed-methods anthropological ethnographic approach. The following chapters (Chapters 4, 5, 6, and 7) present and report the findings, and analysis from each stage of the research process.

4 Findings and Analysis from Phase One and Two

4.1 Introduction

This chapter analyses the data collected during phase one and phase two of the field investigation. Sections 4.2 through 4.4 analyse the data from phase one. Section 4.2 focuses on analysing the overall environment of the villages and the lifestyle of its inhabitants, including both daily life and special lifestyle, based on field notes. Section 4.3 analyses photographs of the yards in the Jidong villages. Section 4.4 is the summary of the first phase.

Sections 4.5 through 4.7 analyse the data from phase two. Section 4.5 examines the types and the spatial layout of currently used furniture in the villages through an analysis of photographs. Section 4.6 analyses the field notes and unstructured interviews on the types of traditional furniture in the village. Section 4.7 presents a summary of the findings from phase two.

4.2 Phase One: Field Notes and Literature

In phase one, the researcher conducted a two-and-a-half-day field study in four villages, guided by local tour guides, and two types of data are collected. The first type was handwritten field notes. The data primarily came from conversations with local guides and enthusiastic villagers. These data were summarized into a Word document, and combined with the book "*Luannan County Record*", the researcher analysed and categorized the field notes into three aspects: the overall environment of the village, daily life of village families, and special lifestyles of village families (including home-based production and families organise folklore events). The second

type of data consisted of photographic data. The researcher took photographs of 30 households yards using mobile phones, and these photographs were compiled into a Word document for descriptive analysis.

4.2.1 Overall Village Environment

The four villages investigated in this research all feature beautiful natural environments, with flat and expansive terrain, as well as abundant natural resources. The surrounding trees are primarily poplars and willows, which support the local natural landscape and material resources. There are economic differences among the villages: Qianmadi Village and Fangpao Village have relatively lower economic levels, and their residents maintain more traditional lifestyles; whereas Shangcaoying Village and Dongbahu Village have more prosperous economies, and their residents lead more modernized lifestyles.

The guides from all four villages consistently pointed out that the residential buildings in these villages are all self-built, yard-style houses. These buildings are heavily influenced by the architectural styles of the Shanxi Jinzhong residences and the Beijing yard houses, with all the houses facing south. The guides from Qianmadi Village and Fangpao Village mentioned that most of the houses were built after the 1976 Tangshan earthquake, and have been standing for about 40 years; while the guides from Shangcaoying Village and Dongbahu Village noted that most of the houses in their villages were built within the last ten to fifteen years.

The study also found significant differences in spatial layout between rural yards and urban residential areas. Rural yards typically cover larger areas, and the main gates of each household’s yard are usually left open and rarely locked, showcasing an

openness and community sense of security that contrasts with the enclosed nature of urban housing.

4.2.2 Daily Life in Rural Households

Household composition

According to "*Luannan County Record*" (2010, pp.1063), household composition in the villages can be categorized into two types based on the number of family members: "large families" and "small families." "Large families" typically consist of 3 to 8 members, including the male and female masters of the household, the husband's parents, and the children of the male and female masters. In contrast, "small families" are composed of 2 to 3 members and can be further divided into two types: the first type includes the male and female masters and their children, where the older generation has either passed away or lives separately; the second type consisting of the husband's parents and the children of the male and female masters, with the masters often working away from the village.

However, field investigation records reveal the presence of a new household type in the villages, consisting of 3 to 5 members, including the male and female masters and their children. The village head of Dongbahu Village noted, "*In last year's population census by the village committee, this type of household, consisting of two adults and their children, accounted for 30% of all household types.*"

The number of family members directly affects the quantity, functionality, comfort, safety, and spatial layout of furniture within the household. For instance, a larger number of family members indicates a greater need for seating, beds, storage space, and other furniture items. Therefore, furniture design principles should be adjusted

based on the actual members of the household. The most common household types in the village need to be further identified in the questionnaire.

Income and consumption

According to "*Luannan County Record*" (2010, pp.412-418), in the four villages, traditional grain farming used to be the main source of income for households, with only a few families primarily engaged in self-sustaining home-based production, focusing on animal husbandry and fishing. However, field notes reveal that grain farming is no longer the primary income source for households. Currently, there are two main sources of income:

The first source is working outside the village. This migration for work is a reluctant choice for many villagers. The male head of household in F92607 stated, "*If I could earn money in the village, I wouldn't have to go work in the city.*" The male head of household in Q92710 added, "*The people from our village who work in the city have no education or skills, and big companies won't hire us. We can only work on construction sites.*"

The second source is home-based production, which refers to small-scale commercial activities conducted within the household. This model not only provides income for the household but also offers employment opportunities to other villagers in the community. During fieldwork, the researcher observed that the notice board at the Qianmadi Village Committee had a section for recruitment information. The staff collects information on new factories in the village at the beginning of each month and posts job vacancies on the notice board to recruit local villagers. The village head of Dongbahu Village explicitly stated that home-based production is currently the main source of income for Dongbahu villagers.

The sources of household income directly influence the selection and configuration of furniture. Households with higher incomes tend to purchase more, higher-quality, and more diverse furniture, while lower-income households tend to choose more practical, durable, and moderately priced furniture. Therefore, exploration in the questionnaire of the differences in household furniture choices between different income sources could provide more detailed data to support furniture design and rural household improvement measures.

During this field study, through conversations with villagers, the researcher summarized five situations in which villagers would choose to purchase furniture. These situations include: when building or renovating a house; when existing furniture styles are outdated; when existing furniture is damaged; during sales or promotional periods at furniture stores; and when children or the household itself is getting married. Questionnaire data is needed to verify which of these situations most strongly influences furniture purchasing decisions.

Regarding the factors that influence furniture purchases, villagers mentioned both internal and external factors. Internal factors include the material, functionality, comfort, design style, size, and environmental friendliness of the furniture. However, the specific factor that has the greatest impact on the purchasing decision still needs to be analysed through questionnaire data. As for external factors, villagers primarily consider price, brand, and after-sales service. More detailed research through questionnaire surveys is needed to determine the relative importance and priority of these external factors in their decision-making.

Socializing and entertainment

According to "*Luannan County Record*" (2010, pp.895-910), "gathering" is the most prominent feature of villagers' daily social and recreational activities, typically involving groups of five or more people. During field visits and observations in the villages, the researcher found that the yard gates and house doors of each household were not locked, and it was common to see 7 to 8 people sitting together in the yard or inside the house, happily engaging in conversation. Socializing and entertainment modes vary according to different age groups in the village. Middle-aged women often gather to play mahjong, do farm work, or chat. Elderly people prefer to relax and talk on the large stone platforms at the village entrance, on the sofas in front of small shops, or on chairs at the doorsteps of certain households. The male owner of Q92712, as a representative of seniors, said, "*Sometimes we also gather to play cards on the kang in someone's house.*" Preschool children gather at certain households to play and watch cartoons. Teenagers in junior high and high school prefer to gather at certain households to play games on their phones or computers.

This suggests that the design of furniture should not only meet basic comfort and practicality needs but also consider the diversity of social and recreational activities in the village. For example, when six people are playing cards, the seating should accommodate enough people and cater to the needs of different age groups. These factors directly influence the functional configuration, material selection, and design of the furniture. Therefore, whether current furniture designs adequately consider these needs remains an issue that needs exploration in the phase three fieldwork.

4.2.3 Special Life in Rural Households

Folk activities

According to "*Luannan County Record*" (2010, pp.1057-1069), the folk activities held at home in Jidong villages of can be divided into four categories: sacrificial rites, childbirth-related activities, traditional festivals, and weddings and funerals. Specifically, sacrificial rites involve setting up an altar at home and offering food to the heavens to seek blessings for the family's health and safety. Childbirth-related activities are held on the third day and the one-hundredth day after the birth of a child, during which the family invites friends and relatives to wish for the child's healthy growth and longevity. Traditional festivals include the New Year, Lantern Festival, Qingming Festival, Dragon Boat Festival, and Mid-Autumn Festival, during which family members gather to share a reunion meal. Weddings and funerals are also typically celebrated with a feast for family and friends at home.

According to the village head of Fangpao Village, childbirth-related activities are no longer held at home due to their complexity. However, other folk activities continue to be hosted at home. On the day of these activities, participants typically include not only family members but also relatives, friends, villagers, and even some strangers. In such cases, the private spaces of the home temporarily transform into open public spaces for the use of all participants. This shift in space may have an impact on the use and arrangement of furniture.

Specifically, the increase in the number of participants and the diversity of activities may create new demands for the quantity, size, and arrangement of furniture. For example, additional seating and dining tables may be needed, or a special altar might need to be set up for specific activities such as sacrificial rites. These scenarios suggest that villagers may prefer multifunctional, flexible, and convenient furniture to

meet different needs during both daily life and special activities. These demands need to be verified in the phase four fieldwork.

Home-based production

In the four villages investigated during this field study, the researcher found that home-based production activities have become a common phenomenon. The village head of Shangcaoying Village said, "*Now, many people in the village are doing home-based production, raising chickens, cattle, and growing vegetables.*" The village head of Dongbahu Village also noted, "*There are many types of production, for example, men typically engage in large-scale production, such as factories or vegetable greenhouses, while women stay home to raise meat chickens and mink. There are all sorts of types... Iron plate processing factories are common in villages, and breakfast processing factories have become popular in recent years.*"

According to the field survey results, home-based production can be broadly divided into two types: family workshops that occupy indoor space and family workshops that occupy yard space. Family workshops that occupy indoor space include village shops and mahjong parlours. In this model, villagers transform their living space (main house) into a business operation. Traditional living spaces are occupied or compressed, which often leads to significant changes in household functions. The use and function of household furniture are also impacted. The specific effects on household furniture and whether new demands arise requires research.

Family workshops that occupy yard space include various types of processing factories (metal workshop, food processing factory, animal breeding factory, and vegetable shed factory). In this model, simple buildings are constructed in the yard or side houses are repurposed for production activities. The researcher found that many

production activities even extend into the night, with some villagers working, resting, or even sleeping in the production spaces. This has led to the emergence of a large amount of furniture in the production space. Whether this furniture has a negative impact on the quality of life or creates a new demand for furniture is a question to be investigated in the fourth phase of the fieldwork.

4.3 Phase One: Photographic Analysis

By organising the photos of the 30 yards, the yards were found to be divided into the following three main types.

The first type is three yards (Q92716, Q92717, Q92718) that were built before the 1976 Tangshan earthquake. These yards survived the 7.6-magnitude earthquake. Now, the yard is in disrepair and uninhabited, but the overall layout can be seen from the wreckage.

The second type is the 12 inhabited yards, but they are divided into two types according to the longevity of the year of construction. The first is the seven yards (F92607, Q92710, Q92712, D93011, S92907, S92908, S92915) with long years of construction; these houses are single-storey, single-entry yards built immediately after the earthquake and are referred to as ‘Type A yards’ in the thesis. The second type is five single-storey, multi-entry yards (Q92711, Q92715, F92610, S92903, D93006) that have been renovated or rebuilt in the last ten to fifteen years and later referred to as ‘Type B yards’ in the thesis.

The third type is the 13 yards with a productive character (F92605, Q92704, Q92713, Q92714, F92601, S92909, S92916, S92917, S92919, D93005, D93015, D93016, D93008). These yards perform a different type of productive function.

4.3.1 Pre-earthquake Yard



Figure 4.1 Actual yard view of Q92716



Figure 4.2 Actual yard view of Q92717



Figure 4.3 Actual yard view of Q92718

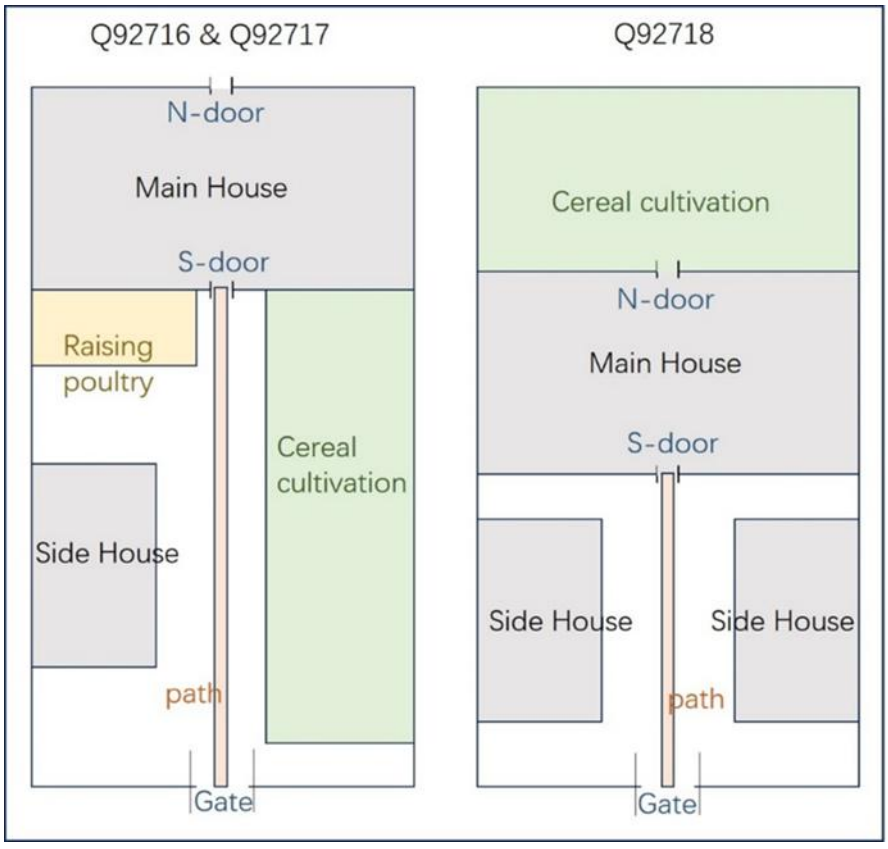


Figure 4.4 Layout of two types of pre-earthquake yards

The layout of Q92716 is the same as that of Q92717, which was one of the most popular yard layouts at that time. The yard has a main house for the elders and a side house for the adults and children. An area for food cultivation that takes up almost 1/3

of the yard, and an area for raising poultry. A path connects the main house's south door with the yard's gate, and the yard is divided into two halves. According to the owner of Q92716, at that time, only the more affluent could afford to raise poultry, mainly chickens, rabbits, ducks, and geese. The poultry breeding area was located between the main house and the side house where people lived, which not only facilitated the owner to take care of the poultry but also prevented thieves from stealing the poultry.

The yard layout in Q92718 is rather particular, with one main house and two side houses. Guide Z and the owners of Q92718 said that this type of yard is because some families have a total population of more than seven people and need to build one more side room to accommodate a larger population than ordinary families. Also, this type of yard is devoid of the raising poultry area; the cereal cultivation area is to the north of the main house, and a path divides the yard into two halves.

4.3.2 Residential Yard

The residential yards were all built after the Tangshan earthquake, and there are two main types: Type A yards (Single-storey, single-entry yards) built immediately after the earthquake (Figure 4.5) and Type B yards (Single-storey, multi-entry yards) built in the last fifteen years or so (Figure 4.6). Q92712 and D93006 mentioned that the Type A yards are now inhabited mainly by older people in the villages who are over 60 years old, and the Type B yards are occupied mainly by middle-aged or newly married couples in the villages.



Figure 4.5 Actual Type A yard view of F92607



Figure 4.6 Actual Type B yard view of Q92715

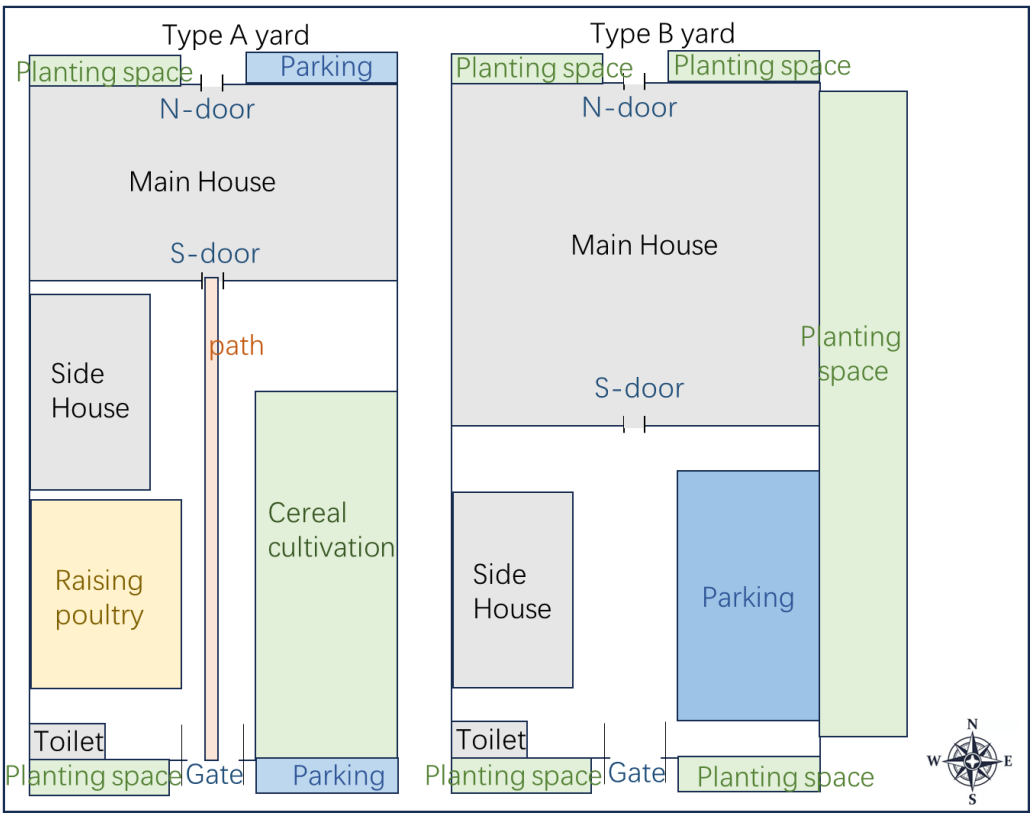


Figure 4.7 Layout of two types of residential yards

Type A yard is rectangular, with houses used for human habitation, livestock rearing, and storage. (Figure 4.7). The yard includes gates, a main house, a side house, a toilet, a poultry-raising area, and a cereal cultivation area. The main house is located in the northernmost part of the yard and is used for living. Unlike the pre-earthquake yard, the Type A yard has a side house in front of the main house instead of a raising poultry area. The residents of F92607 explained, "*If the poultry breeding area is placed in front of the main house like the house before the earthquake, the smell of animals will be too strong.*" So, the raising area in the Type A yard was built in the middle of the side houses and toilets.

Unlike the pre-earthquake yard, the side rooms of the Type A yards are now used for storing miscellaneous items rather than for living (Chiefs of Fangpao and Dongbahu). Opposite the toilet and poultry-raising area is the cereal cultivation area. The residents

of S92907, S92908 and S92915 said that "*the type of planting in the houses before the earthquake was very homogeneous, just some grains, but the planting area in the Type A houses would be based on the needs of the family, not only grains but also fruits and vegetables*". Additionally, the main gate of the Type A yard directly faces the main house door, connected by a cement or dirt path. All the open fields in the yard, and the main house's roof can be used as fields for drying grains. Families Q92710, Q92712, D93011, and S92907 have set up cellars, hand-pumped wells, and granaries between the main house and the cereal cultivation area (Figure 4.8).



Figure 4.8 Cellars, hand-pumped wells, and granaries in Type A yard of Q92712

Type B yards' layout is more rational than Type A yards (Figure 4.7). Although the overall area within the Type B yards remains unchanged, the positions and sizes of each functional zone have been altered. Firstly, the Type B yards have eliminated the poultry-raising areas. The cereal cultivation areas within the Type A yards have been converted into parking spaces. All planting is done outside the yard. Secondly, the main house in the Type B yard is twice the size of the Type A one. Residents of five Type B yards (Q92711, Q92715, F92610, S92903, and D93006) stated, "*When we lived in the Type A houses, we were poor, and we didn't have much furniture, so there was no need to build large houses. But now that our living standards have improved*

and we can earn more money, the Type A houses are too small to accommodate all our furniture, so we built larger ones." Therefore, when constructing the Type B yards, the villagers expanded the size of the main house used for living. The resident of D93006 also mentioned that the side house in the Type B yard still serves the same function as in the Type A yards, being used for storage.

In addition, all the open fields in the Type B yard were cemented and turned into concrete floors. The areas outside the north door and the main gate have also been paved with cement. Like the Type A yards, all photographed Type B yards have granaries, cellars, and hand-pumped wells in front of the main houses (Figure 4.9).



Figure 4.9 Cellars, hand-pumped wells, and granaries in Type A yard of F92610

4.3.3 Production-type Yard

Yards with production functions are locally known as 'family workshops'. Currently, family workshops in the village include the village shop, mahjong parlour, sheet metal

workshop, breakfast processing factory, vegetable shed factory, and animal breeding factory. The village shop and mahjong parlour do not change the spatial layout of the yard but occupy the space of the main house. The other processing factories occupy the side house or build a production house in the yard.



Figure 4.10 Actual view of village shop Q92704, converted from the Type A yard.



Figure 4.11 Actual view of village shop D93015, converted from the Type B yard.

The village shop is the most important of the family workshops, with two or three village shops in each of the four villages for villagers to buy daily necessities. There are two types of village shops: those converted from Type A yards (Figure 4.10) and those converted from Type B yards (Figure 4.11). The shop converted from the Type A yard occupies the main room, and the side room becomes the main room and assumes the living function (Figure 4.12).

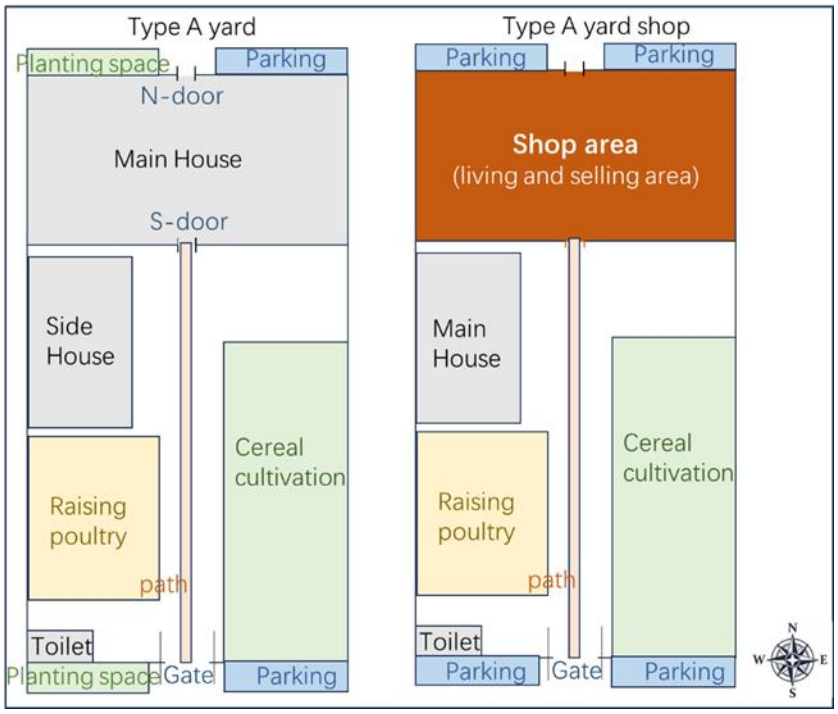


Figure 4.12 Layout of the village shop converted from the Type A yard.

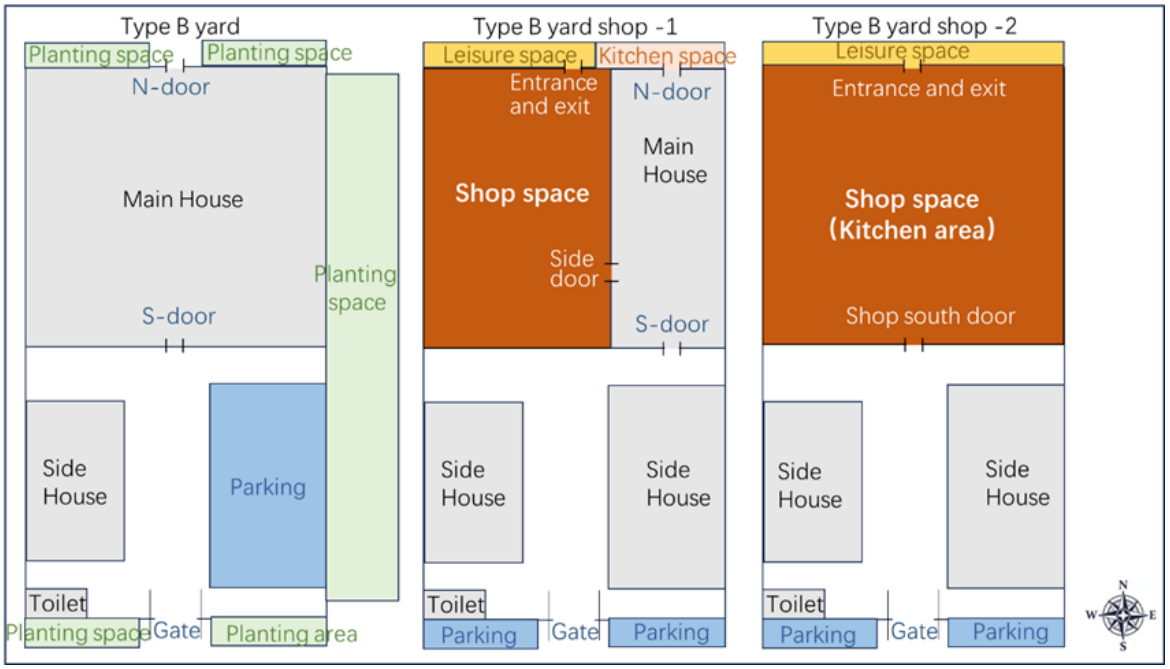


Figure 4.13 Layout of the village shop converted from the Type B yard.

There are two types of shops converted from the Type B yard. The first is a shop area occupying two-thirds of the main house's space (Figure 4.13). A wall is built between

the main house and the shop area, and a side door in the wall is used for access by the shopkeeper and his family. The main house has a north and a south door, and the shop area has a separate entrance and exit door for customer access. The main house and two side houses were used for living. In addition, a simple shed was erected outside the north yard and divided into leisure and kitchen areas. The leisure area is where sofas are placed for customers who come to buy goods to relax, and the kitchen area is the cooking area for the shop owner's family. Outside the southern yard, the two sides of the gate are set up as parking areas.

The second type, like the Type A converted shop, is that the store area occupies the entire space of the main room, while the living space is in the two side rooms (Figure 4.13). This type of shop is very spacious and well-stocked. As with the first type, the parking area remains outside the yard gate. Unlike the first type, there is only a leisure area outside the north door and no cooking area. The owner of shop D93008 added: "*The cooking area is in the side house, and the eating area is within the shop.*"

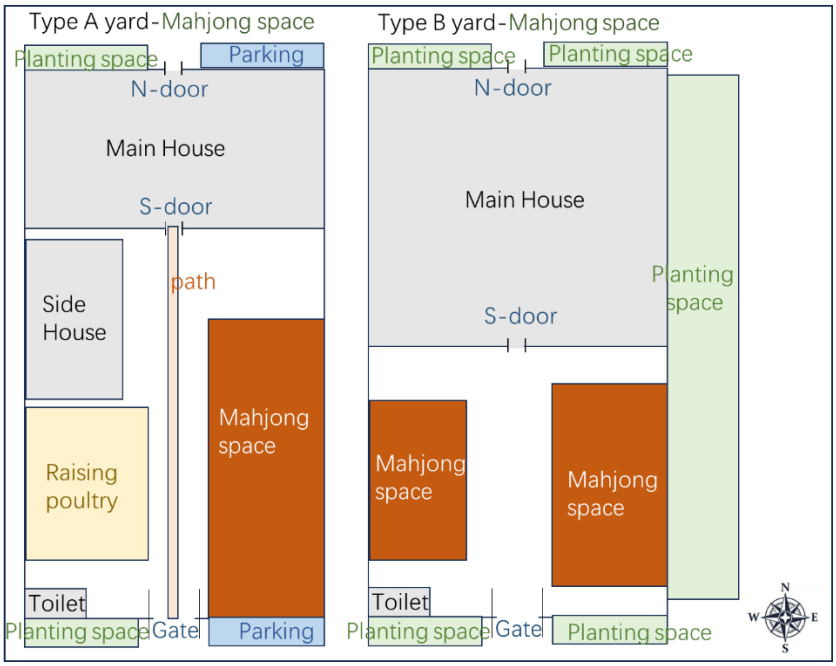


Figure 4.14 Layout of the mahjong parlours converted from the Type A and B yards

The mahjong parlour occupies a side house and parking area in the Type B yard, and a cereal planting area in the Type A yard is used to build a simple room as a mahjong parlour (Figure 4.14).

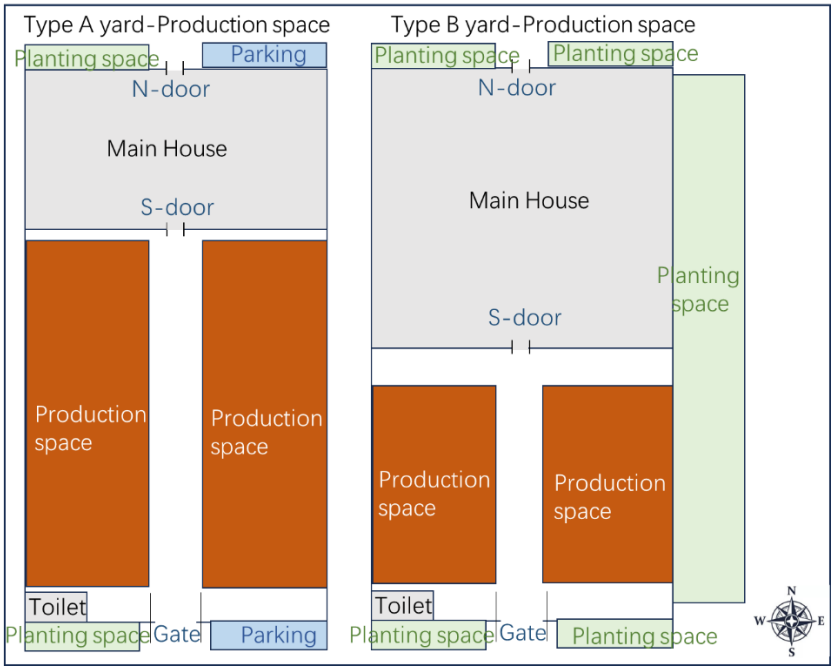


Figure 4.15 Layout of the home-based production converted from the Type A and B yards

The sheet metal workshop, breakfast processing factory, vegetable shed factory, and animal breeding factory occupy all the spaces in the yard as production houses, both Type B and Type A, except for the space of the main house and the toilet, including two categories (Figure 4.15). The first is transformed by the Type A yard. By closing the top of the yard, the villagers demolished the side houses on both sides and built simple houses as production space. The second is transformed by the Type B yard, which directly occupies the side room and parking area as production space. Figure 4.16 shows the scenes inside the D93016 mahjong parlour and S92909 bun processing factory.



Figure 4.16 Actual view of D93016 mahjong parlour and S92909 bun processing factory.

4.4 Summary of Phase One

In this phase, the researcher, based on fieldwork notes and relevant records from the "*Luannan County Record*", conducted an in-depth analysis of the daily and special lifestyles in Jidong rural. This analysis provides an essential foundation for the quantitative and qualitative collection of furniture data in subsequent stages three, four, and five. Additionally, the researcher identified three typical yard types currently found in rural Jidong through photographic documentation: first, the pre-1962 pre-earthquake yards; second, the residential yards of types A and B established from 1962 to the present; and third, the production-yards that occupy residential spaces. This typology of yards serves as a contextual background for research on household furniture.

4.5 Phase Two: Photographic Analysis of Currently Used Furniture

The researcher analysed photos of the layout and types of currently used furniture in the main house space (living space) of 63 households (Table 3.5). Specifically, the following data were included: photographs of the main houses in the three pre-earthquake yards; photographs of the main houses (Type A houses) in the 20 Type A

yards; photographs of the main houses (Type B houses) in the 20 Type B yards; and production spaces in the 20 home-based production yards.

4.5.1 The Pre-earthquake House

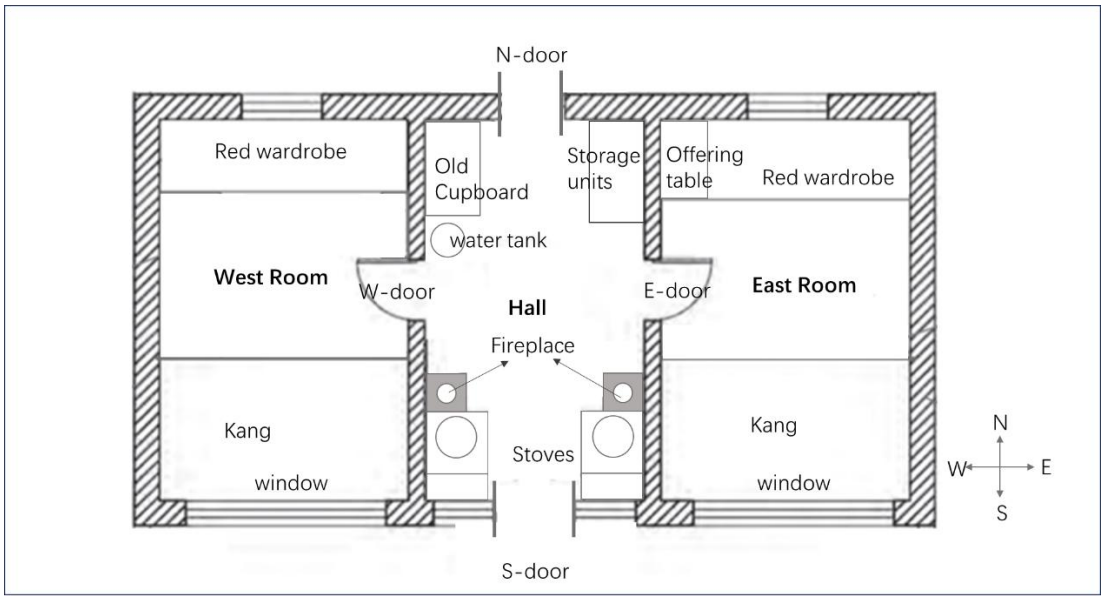


Figure 4.17 Layout of currently used furniture in the pre-earthquake main house

The pre-earthquake residences are currently uninhabited, but examining the remaining furniture images reveals that the primary living space was in the main house. The overall layout of the main house is low and consists of a single story with three bays. The width from east to west is 9.5 to 11 meters, the length from north to south is 5 to 7 meters, and the height ranges from 2.8 to 3 meters. The main house (Figure 4.17) is divided into three sections: the central hall (also known as the "parlour" or "kitchen"), the eastern room, and the western room (Both are referred to as the "inner room"). The owner of Q92718 commented, "*Unlike the southern regions of China, where the central hall is often used for worship, in Jidong, the hall serves the function of a kitchen, while the inner rooms are used for living, similar to bedrooms.*"



Figure 4.18 Q92717 wall



Figure 4.19 Q92717 roof



Figure 4.20 Q92717 window

The walls of the house are constructed from red bricks (Figure 4.18), while the roofs are made of poplar or willow wood (Figure 4.19). The windows are crafted from pine wood and are referred to as "small open windows," also known as "carved windows"

(Figure 4.20). The lengths of the inner rooms range from 3.2 to 3.7 meters. The furniture in the two inner rooms, used for residential purposes, is similar. In the case of the eastern house, the furniture consists of three main parts: the kang (a heated brick bed) and its surrounding items on the north side, the red wardrobe and surrounding living items on the south side, and the furniture suspended from the walls.



Figure 4.21 The internal structure of the Q92716's Kang



Figure 4.22 Kang and surrounding items of Q92717

The north side: figure 4.21 shows the internal structure of the kang, revealing signs of manual construction. Figure 4.22 illustrates the kang and surrounding items, including the kang mat, kang quilt, kang cushion, and a flyswatter. An old-fashioned electric light controlled by a rope is attached to the wall near the kang (Figure 4.23).



Figure 4.23 Bulbs and switches for an old-fashioned electric light of Q92718



Figure 4.24 Q92718 red wardrobe



Figure 4.25 An old-fashioned four-panel mirror of Q92716



Figure 4.26 Q92716 mantel clock

The south side: opposite the kang is the red wardrobe (Figure 4.24). Directly above this red wardrobe hangs an old-fashioned four-panel screen[12] (Figure 4.25), and a mantel clock (Figure 4.26) is placed on top of the red wardrobe. Beside the red wardrobe is an altar table (also called an 'offering table') (Figure 4.27).



Figure 4.27 Q92716 altar table



Figure 4.28 Q92717 woven wicker basket



Figure 4.29 Q92717 woven straw hat

[12] Handcrafted carved mirror, made by artisans in the village, is detailed in 4.6.4 of thesis.



Figure 4.30 Q92716 wall clock

The furniture suspended from the walls includes a woven wicker basket (Figure 4.28) hanging from the roof beam, a woven straw hat (Figure 4.29), and a wall clock (Figure 4.30). Additionally, wooden pieces suspended from the roof beam, locally known as "manzi"(Figure 4.31), hold infrequently used household items.



Figure 4.31 Q92716 manzi



Figure 4.32 Fabric door curtain of Q92716



Figure 4.33 Paper door curtain of Q92717

In addition, the partition between the inner rooms and the hall comprises door curtains. Figure 4.32 shows the fabric door curtain used in spring, autumn, and winter, while Figure 4.33 depicts the paper door curtain used in summer. A platform is set above the door of the inner rooms (Figure 4.34), which stores miscellaneous items such as matches and nails.



Figure 4.34 Q92716 platform



Figure 4.35 Q92717 stove



Figure 4.36 Q92718 fireplace



Figure 4.37 Q92717 water tank



Figure 4.38 Q92718 water ladle



Figure 4.39 Q92718 old cupboard



Figure 4.40 A straw-woven pot lid of Q92717

The central hall has an east-west width ranging from 3.1 to 3.6 meters. The furniture primarily consists of kitchen utensils, functioning similarly to a kitchen. These include two stoves built with red bricks (Figure 4.35) and a furnace (also known locally as 'Fireplace') (Figure 4.36), a water tank (also known locally as 'water crock') (Figure 4.37), a water ladle (Figure 4.38), an old cupboard (Figure 4.39), and a straw-woven pot lid (Figure 4.40).

4.5.2 The Residential House

Type A house



Figure 4.41 The exterior of F92607.

The primary living space in Type A yards is the main house (Type A house). Type A house has an east-west width of 9.5 to 11 meters, a north-south length of 5 to 7 meters, and a height of 2.8 to 3 meters. Figure 4.41 shows the exterior of a Type A

house. The building's facade has smooth walls constructed with bricks on the upper part and stones on the lower part, with cement filling the gaps. The roof is made of pine wood.

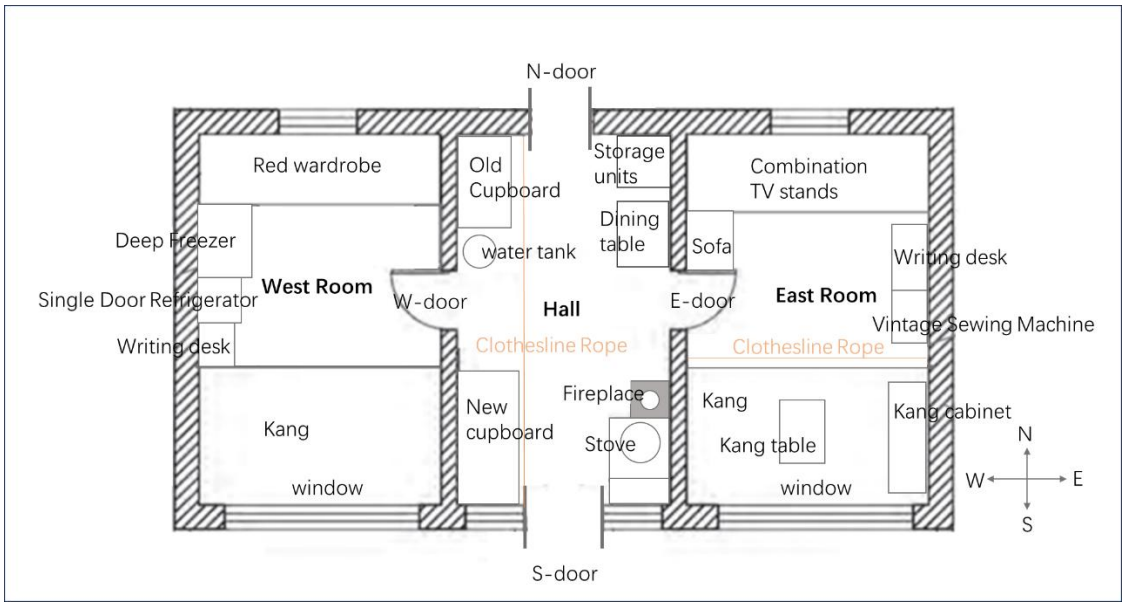


Figure 4.42 Layout of currently used furniture in the Type A house.

The layout of the Type A house (Figure 4.42) is the same as that of the pre-earthquake houses, comprising three parts: two inner rooms (the east and west room), and the central hall. The central hall in the Type A houses serves as both the kitchen and dining room, mainly storing kitchen utensils. The inner rooms are used for living and receiving guests, functioning as bedrooms and living rooms.

The inner rooms are 3.2 to 3.7 meters each. Typically, the west room is occupied by elders or children, while the east room is for the house owners. The east room contains four types: sleeping furniture centred around the kang on the south side, storage and washing furniture centred around the combination TV stand on the north side, guest reception and study furniture on the east and west sides, and wall-mounted and decorative furniture.



Figure 4.43 Sleeping furniture of F92607

The south side (Figure 4.43): Compared to pre-earthquake houses, the kang in Type A houses has more living supplies, including the kang, kang bedding, mattresses, blankets, pillows, and pillow covers. The bedding is neatly stacked in the corner of the kang. Often, a kang table is placed on the kang, and some families have a kang cabinet next to it.



Figure 4.44 F92607 combination TV stand

The north side: A combination TV stand (Figure 4.44) replaces the red wardrobe found in pre-earthquake houses and occupies about 30% of the room's total area. The combination TV stand includes wardrobes on both sides and a TV cabinet in the

middle, serving storage and entertainment functions. Adjacent to it are washing items, such as a washstand, thermos flask, and basin rack. The washstand usually has a small platform for placing soap; if not, the soap is placed on the combination TV cabinet.



Figure 4.45 F92607 sofa



Figure 4.46 Q92710 writing desk

The east and west sides are mainly guest reception and study furniture (Figure 4.45) (Figure 4.46), including a writing desk, sewing machine, sofa, and chairs. Wall-mounted and decorative furniture includes (Figure 4.47) roof lamps, roof fans, clotheslines, wall mirrors, wall paintings, posters, clocks, and mosquito nets.



Figure 4.47 Wall-mounted and decorative furniture in F92607



Figure 4.48 Q92710 kang



Figure 4.49 F92607 red wardrobe



Figure 4.50 Q92710 freezer


Figure 4.51 F92607 manzi

The furnishings in the west room are straightforward. On the south side is the kang (Figure 4.48). On the north side is the red wardrobe, on top of which sundry items are placed (Figure 4.49). On the east side is a refrigerator, a freezer and a writing desk (Figure 4.50). The ‘Manzi’ hanging from the roof stores items that are not commonly used (Figure 4.51). Twelve families with a small number of people used the west room directly as a storage room, while eight families with many people used it for their children.

The central hall (Figure 4.42) has an east-west width of 3.1-3.6 meters. The hall features two doors, the south door and the north door, which also serve as the main entrances and exits of the main house. The partitions between the central hall and the inner rooms are not doors but door curtains (Figure 4.52).



Figure 4.52 F92607 door curtain



Figure 4.53 A stove and a furnace of Q92710



Figure 4.54 F92607new cupboard



Figure 4.55 D93011 traditional cupboard



Figure 4.56 A water tank and faucet of F92607.



Figure 4.57 F92607 storage units



Figure 4.58 Sitting furniture in the central hall of Type A house

In the southeast corner of the hall, there is a stove and a furnace, with a broom and a dustpan placed next to the furnace (Figure 4.53). The southwest corner houses a new cupboard (Figure 4.54), which stores various condiments, rice, flour, cookware, and utensils. Several kitchen appliances are placed on the cupboard's countertop, including a pressure cooker, pans, gas cooker. In the northwest corner, there is a traditional cupboard (Figure 4.55), along with a water tank, water ladles, plastic water ladles, and a cutting board. The traditional cupboard contains chopsticks, bowls, plates, and leftover food. Above the water tank is a faucet connected to the tap water system (Figure 4.56). In the northeast corner (Figure 4.57), storage units, a square dining table, a round dining table, and cupboards or kang tables are placed. Around

the tables, there are various types of sitting, including high wooden stools, iron stools, plastic stools, or wooden benches (Figure 4.58).



Figure 4.59 A clothesline and a kitchen steamer of F92607.



Figure 4.60 Q92710 sofa



Figure 4.61 S92915 wooden chair

Additionally, nails are hammered into the north and south walls of the hall, with a rope strung between them to serve as a clothesline, where towels or clothes are hung to dry. A kitchen steamer is also hung on the walls using nails (Figure 4.59). Only two

families place living room sofas or wooden chairs in the northwest or northeast corners (Figure 4.60) (Figure 4.61).

Compared with the pre-earthquake houses, the space dimensions of Type A houses remain the same, but the types of furniture have been increased and the space layout has been rationalised. For the inner rooms, the west room remained unchanged in its entirety, but the east room was refurbished with new usable furniture, such as sofas and combination TV stands, which made the east room not only functional as a bedroom but also as a living and entertaining room. The types of furniture in the central hall have also been increased, such as new cupboards, dining sets, and hanging furniture for seating. In addition, the old cupboard on the west side of the pre-earthquake house has been replaced by a new cupboard in the Type A house to store more kitchenware.

Type B house



Figure 4.62 The exterior of Q92711

The living space in the Type B yards is mainly centred around the main house (Type B house). Type B house has a width of 11 meters and a length of 11 meters, with a

height of 3 meters. Figure 4.62 shows the exterior of a Type B yard's main house. The construction materials for the walls are similar to those of the Type A houses, with bricks, stones and cement filling the gaps. However, the surfaces of the Type B house walls are covered with colourful tiles. The roof is reinforced concrete, and the windows are made of aluminium alloy.

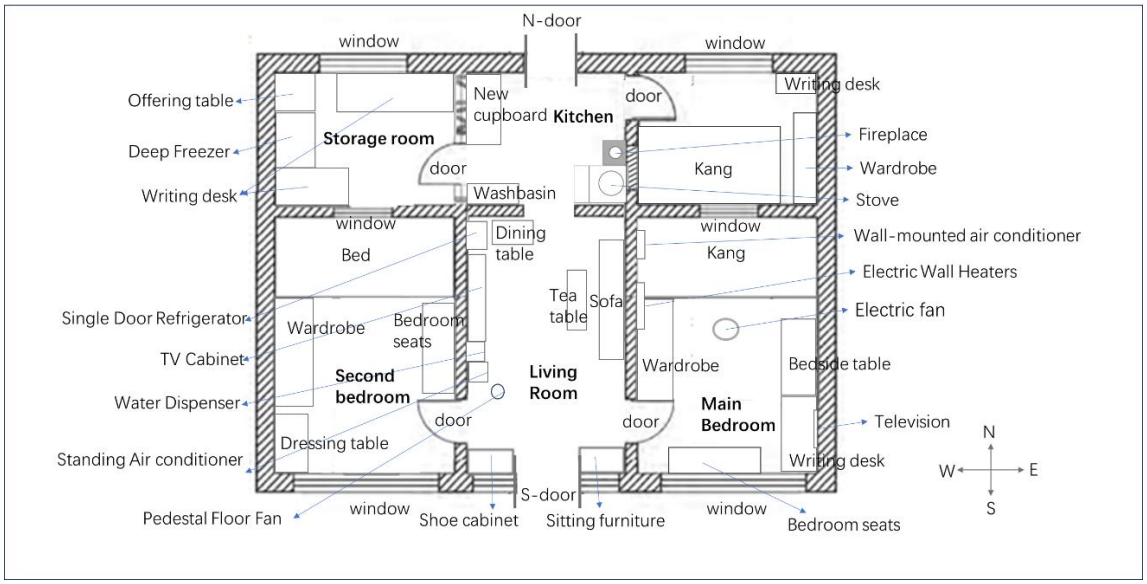


Figure 4.63 Layout of currently used furniture in the Type B house.

The main house has 5-6 distinct spaces (Figure 4.63). The central southern area serves as the living room, measuring 7 meters in length from north to south and 4 meters in width from east to west, and is furnished with living room furniture. The central northern area functions as the kitchen, measuring 4 meters by 4 meters. In the study of 17 households, 2 had no wall between the living room and the kitchen, thus integrating these spaces into a single area.

The southern section, which receives sunlight, contains two bedrooms of equal size, each measuring 3.5 meters in length from east to west and 7 meters in width from north to south. The southeastern space is the main bedroom, occupied by the male and female heads of the household. The southwestern space is the secondary bedroom, typically used by elders or children. The northeastern and northwestern areas can be

used as children's bedrooms or storage rooms. Among the families studied, three households removed the wall between the kitchen and the northwestern space, merging these two areas into a single kitchen space.

The living room furniture is divided into six categories: TV cabinets and surrounding items, tea table and sofa area, dining table and chairs area, entryway area, hanging decorations, and smart products.

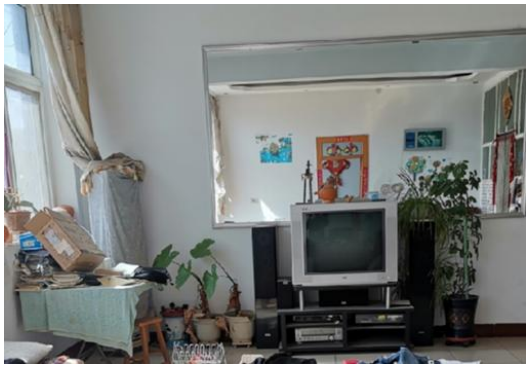


Figure 4.64 TV cabinets and surrounding items of Q92711



Figure 4.65 TV cabinets and surrounding items of D93006



Figure 4.66 TV cabinets and surrounding items of Q92715

In terms of TV cabinets and surrounding items, only the Q92711 and D93006 households have a TV on the cabinet (Figure 4.64, Figure 4.65). Other families use the TV cabinet to store various items. Surrounding the TV cabinet are household appliances such as standing air conditioners, pedestal floor fans, plastic stools, and water dispensers (Figure 4.66). The wall behind the TV cabinet often features paintings or mirrors.



Figure 4.67 The tea table and sofa area of D93003

The tea table and sofa area (Figure 4.67) are cluttered with various dining utensils, including chopsticks, bowls, leftovers, and rice cookers. Sitting furniture around the tea table are diverse, including plastic stools, iron ring stools, and square wooden stools. All 17 households surveyed place their dining tables and chairs in the living

room (Figure 4.68). According to the residents of the Q92715 household, this arrangement is due to the limited space in the adjacent kitchen. The kitchen is so tiny that a cupboard and a stove are placed in the entire space, necessitating the use of the living room for dining.



Figure 4.68 The dining table and chairs of Q92715



Figure 4.69 Q92715 entryway



Figure 4.70 F92610 entryway

The entryway connects the living room to the yard and includes shoe cabinets, shoe racks, shoe boxes, seating, delivery boxes, and potted factories (Figure 4.69; Figure 4.70). The resident of F92610 added that the shoe cabinets are often cluttered with shoe polish, brushes, and grocery bags.



Figure 4.71 Hanging decorations in the living room of Type B house

Hanging decorations in the living room (Figure 4.71) include half-body mirrors, wedding photos, electronic clocks, small ornaments, calendars, keychains, and full-body mirrors.

These homes have relatively few smart products, mainly limited to essential household appliances. These include air conditioners, fans, refrigerators, and freezers in the living room.



Figure 4.72 A furnace and a stove of Q92711



Figure 4.73 Q92715 new cupboard

The kitchen space is adjacent to the living room. The kitchen floor and stove are tiled, with the furnace beside the stove and a kettle on top. Numerous cleaning tools, including brooms and mops, surround the stove (Figure 4.72). Opposite or adjacent to the stove platform, there is usually a new cupboard which holds a variety of kitchen supplies (Figure 4.73).



Figure 4.74 The washing area of Q92711



Figure 4.75 The washing area for seniors of D93006

Next to the cupboard is the washing area (Figure 4.74). The washing area includes fixtures such as a washbasin, an iron rack, a half-length mirror, various washing supplies, a hot water kettle, and small buckets. Among the 17 families studied, 16 combine the washing area with the kitchen space. Only three families have set up a separate washing area in the utility room to accommodate elderly family members (Figure 4.75).



Figure 4.76 The south window of Q92711



Figure 4.77 The north window of Q92711

The main bedroom on the eastern side of the house (Figure 4.65) is inhabited by the male and female heads of the household. This room features two windows, one facing south (Figure 4.76) and one facing north (Figure 4.77), with 13 families having installed curtains. On the northern side is a modern heated kang bed covered with tiles and equipped with kang furniture such as a kang table, bedding neatly stacked in the corner, and a broom for sweeping the kang.

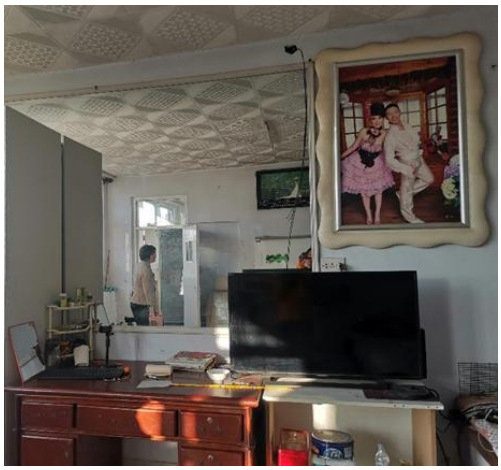


Figure 4.78 Q92711 TV



Figure 4.79 Q92715 TV



Figure 4.80 Q92711 wardrobe

On the eastern side of the room, there is a bedside table and a TV cabinet. Every family place a television in the main bedroom; 18 families have the TV on the desk (Figure 4.78), while two families have it directly mounted on the wall (Figure 4.79). A wardrobe is placed on the western side (Figure 4.80). Beneath the southern window, 137families have placed seating furniture, such as two wooden chairs side by side or a single sofa (Figure 4.76). The walls of the main bedroom are adorned with various hanging items, including a wall-mounted air conditioner, electric wall heaters, lights, fans, marriage certificates, and posters.



Figure 4.81 A wooden hardboard bed of Q92711



Figure 4.82 A wardrobe and a dressing table of Q92715



Figure 4.83 Old car seats of S92903

The secondary bedroom on the western side is used by elderly family members or young adults. On the northern side is a Japanese tatami or a wooden hardboard bed, with bedding similar to that used on the kang in the main house (Figure 4.81). The western side features a wardrobe and a dressing table (Figure 4.82). The eastern side contains seating furniture, typically wooden chairs, and three families have repurposed old car seats as chairs (Figure 4.83).



Figure 4.84 The northeast storage room of S92903



Figure 4.85 The northeast bedroom of Q92711



Figure 4.86 The northwest storage room of Q92711

The spaces in the northeast and northwest parts of the house are relatively smaller. In the northeast, 4 families use this area as a storage room (Figure 4.84), while 16 use it as a bedroom (Figure 4.85) consisting of a kang bed, a wardrobe, and a desk. In the northwest,14 families use this space as a storage room (Figure 4.86), primarily for storing unused furniture, including supply tables, freezers, desks, and unused books.

In the 20 families surveyed, the partitions between spaces are either sliding doors or hinged doors. The south door of the living room is equipped with a sliding door (Figure 4.69), while the doors separating other spaces are hinged (Figure 4.68). Almost all the bedroom door frames have cloth curtains hanging on them.

The dimensions of the spaces in the Type B houses have changed compared to the Type A houses. Although the width and height of the main house remain the same as the Type A houses, the north-south length is 4 metres longer. Additionally, the number of sitting furniture, storage items, and smart products has increased in the Type B houses.

In the layout of the bedrooms, the kang bed in the Type A houses was on the south side, whereas in the Type B houses, it is on the north side. A resident of F92610 explained, "*This is mainly because the Type B living room needs to face the sun, the kitchen has become smaller and is arranged in the shade, and the stove needs to be connected to the kang to heat the kang. Therefore, placing the kang on the north side of the bedroom can shorten the connection distance with the stove".*

4.5.3 The Production-type House

Workshops utilizing indoor spaces

Village shops

During the survey, photos of 10 village shops were collected (Q92704, Q92713, Q92714, F92601, S92916, S92917, S92919, D93005, D93015, D93008). The first six shops were renovated from Type A houses, while the last four were renovated from Type B houses.

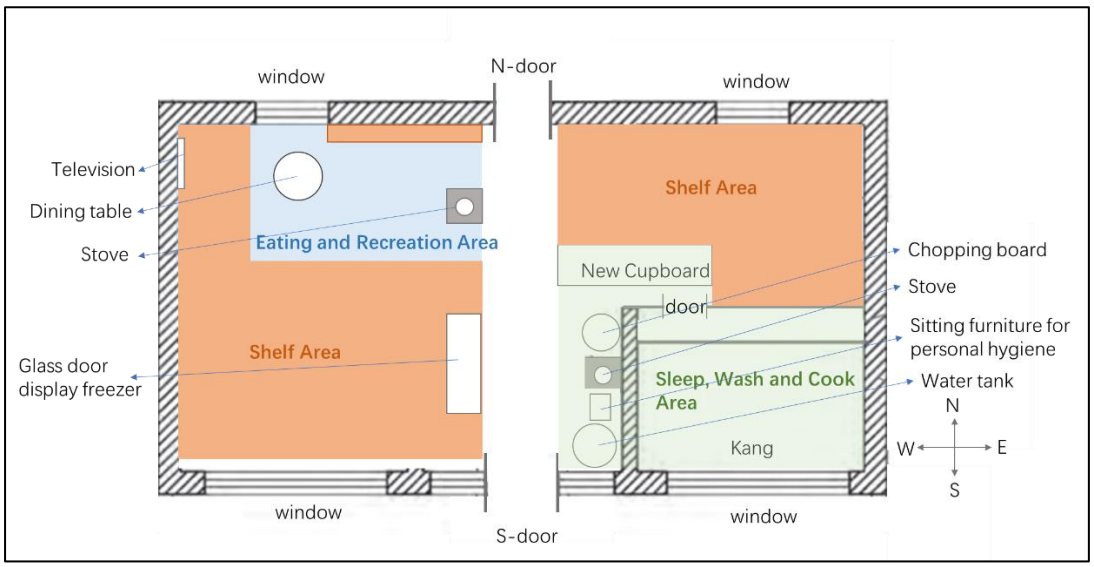


Figure 4.87 Furniture layout of the village shop converted from the Type A house

Figure 4.87 shows the layout of the village shop furniture converted from the Type A house. The shop is symmetrically divided into east and west parts along a central axis with north and south doors. The eastern part includes the shelf area and eating and recreation area (Figure 4.88). The western part comprises the shelf area, as well as the washing, cooking, and sleeping area (Figure 4.89). Furniture in the sales area consists solely of shelves. The eating and recreation area in the eastern part includes a television, dining table, stoves, a glass door display freezer, and various sitting furniture. The washing, cooking, and sleeping area in the western part includes a new cupboard, kang bed, chopping board, stoves, sitting furniture for personal hygiene, and a water tank.



Figure 4.88 The eating and recreation area of Q92704



Figure 4.89 The washing, cooking, and sleeping area of Q92704

While collecting photos, the researcher found that owners of these six shops renovated from Type A yards were reluctant to refurbish the entire shop but were interested in adjusting the furniture arrangement to expand the sales area. Among them, shop owners of Q92713, Q92714, S92916, and S92917, who are all over 60 years old, expressed that the current residential and dining furniture in the shop is not suitable for elderly use and intended to replace them with more elderly-friendly furniture.

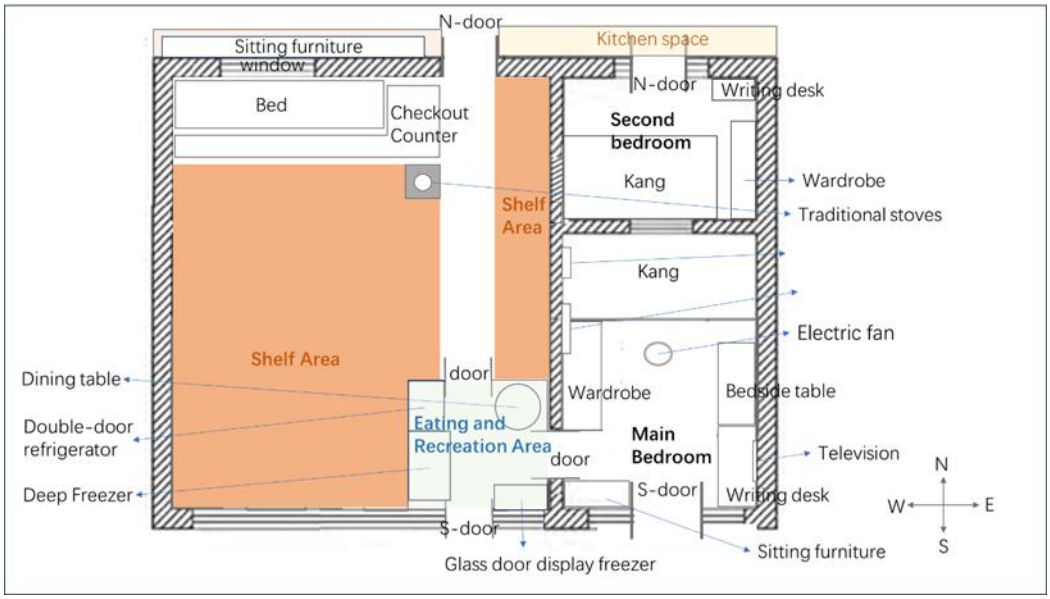


Figure 4.90 Furniture layout of the village shop converted from the Type B house.

Figure 4.90 shows shops renovated from Type B yards, specifically S92919 and D93005, renovated in 2015. These shops occupy the main house area of the Type B

yard and are divided into three parts: the western sales area, the northwestern main bedroom, and the northeastern secondary bedroom. The furniture in the main and secondary bedrooms is similar to that of the Type B houses, including a kang bed, writing desk, wardrobe, wall-mounted air conditioner, electric wall heaters, electric fan, bedside table, and television. The western sales area includes not only shelves and merchandises (Figure 4.91) but also an eating and recreation area (Figure 4.92) furnished with a dining table, double-door refrigerator, glass door display freezer, deep freezer, and various sitting furniture.



Figure 4.91 Shelves and merchandises area of S92919



Figure 4.92 Eating and recreation area of S92919

Compared to shops renovated from Type A yards, those from Type B yards also feature eating and reaction areas, although the furniture differs slightly. Both types of shops have dining tables, sitting furniture, and glass door display freezers. However,

the Type B yard shops do not have televisions. An employee at D93015 commented, "*I don't see the point of having a TV here. Young people prefer using their phones.*" The Type B yard shops have more refrigerators and freezers than the Type A ones. The owner of D93015 explained, "*We have more refrigerators and freezers because there is a lot of frozen food, both for family consumption and for sale. More storage helps prevent spoilage.*" Additionally, the dining tables in these areas are sometimes used for playing mahjong.

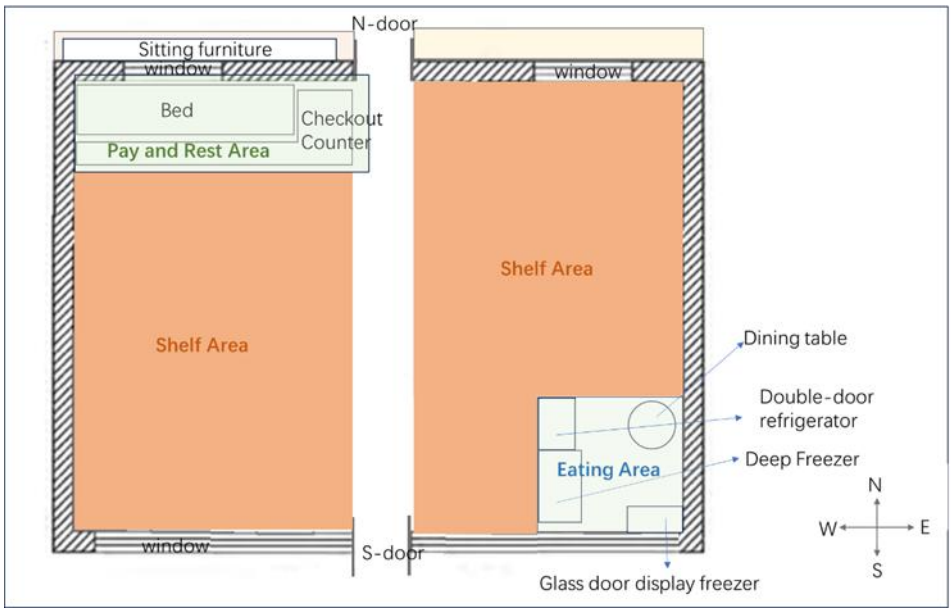


Figure 4.93 Furniture layout of the D93008 village shop converted from the Type B house

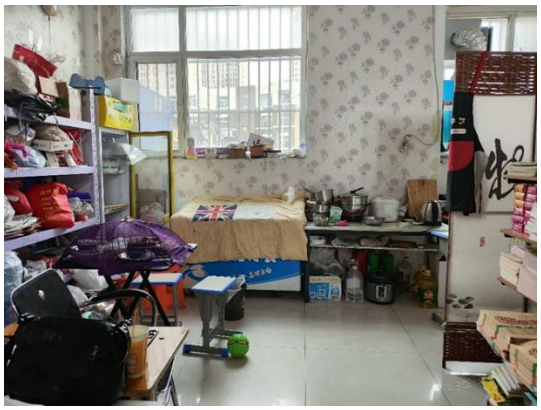


Figure 4.94 Eating area of D93008



Figure 4.95 Shelves and merchandises area of village shop D93008

Figure 4.93 shows the shop at D93008, renovated in 2020. This shop has a more formal layout and a more comprehensive selection of merchandise (Figure 4.95). The shop owner expanded the shop area to occupy the entire main house, leaving only the northwestern pay and rest area and the southeastern eating area (Figure 4.94). The pay and rest area includes a bed and a checkout counter. The furniture in the eating area is similar to that in the shops shown in Figure 4.89, with a comparable layout.

The above analysis shows the spatial layouts of different residential houses converted into shops and the development changes of these shops over the past 30 years. Unlike sizeable urban shopping malls, village shops function as points of sale and serve as spaces for entertainment, cooking, dining, and resting. Various types of currently used furniture are used in village shops to meet these diverse needs. The practical issues arising from using this furniture warrant in-depth research.

Mahjong parlours

The mahjong parlours in the village are fewer and fewer in number with only two (D93016 and S92908) as emerging entertainment venues. The type of furniture and arrangement of these mahjong parlours has not yet developed a fixed spatial layout. However, the furniture configurations have basically included mahjong tables, stools,

cookers, beds, air conditioners and electric fans (Figure 4.14).

Workshops utilizing outdoor spaces

The researcher collected data on eight types of processing factories that utilize outdoor space for production. These include F92605, D93002, D93003 sheet metal workshop, S92909 steamed bun factory, D93004, D93001, D93010 animal breeding factory, and D93012 vegetable shed factory.



Figure 4.96 F92605 sheet metal workshop

Figure 4.96 illustrates the production facility of a sheet metal workshop. In addition to the production machines for processing iron sheets, currently used furniture in these facilities includes electric lights, floor fans, ceiling fans, seating, furnaces, and heaters.

Regarding fans, furnaces, and heaters, the owner of the D93003 sheet metal workshop explained, "*The large machines used in the iron sheet processing generate a significant amount of heat during operation. In the summer, we need around seven to eight fans... The winter temperature in Tangshan can drop to -13 degrees Celsius, which is too cold for humans to endure. we use plastic sheeting to enclose the entire production facility and set up furnaces and heaters to keep the space warm.*" The owners of the other two factories also concurred with this assessment. From their comments, it is explained why a large amount of currently used furniture is found in

the production space, and what is needed for this furniture in the production space to be studied next.



Figure 4.97 S92909 steamed bun factory.

Figure 4.97 depicts the production facility of the S92909 steamed bun factory, which is used for mass-producing steamed buns. In addition to the equipment for steaming buns, the furniture includes electric lights, floor fans, ceiling fans, seating, stoves, heaters, and a cooking stove.



Figure 4.98 D93004 animal breeding factory

Figure 4.98 shows the D93004 Nyctereutes procyonoides (common racoon dog) breeding factory. The owner converted the yard space into iron cages to house the animals. The D93010 owner stated, "*I don't think my factory impact on currently used furniture.*" However, the owner of D93004 noted, "*Every time I enter the house, I forget to change my shoes and end up lying on the sofa.*" The owner of D93001 added, "*Our chickens are very smart. In the summer, they peck open the living room*

door when the air conditioning is on, and the living room gets filled with their droppings. It's very dirty." From these comments, it is clear that while these factories may not use furniture in their production spaces, they affect the living areas' currently used furniture.



Figure 4.99 D93012 vegetable shed factory

Figure 4.99 shows the D93012 vegetable shed factory, where currently used furniture is not needed for production. The owner stated, "*Our work involves dealing with soil, which is messy... The white walls in my house have turned black, and all the furniture is dirty, and there's nothing we can do about it.*" This indicates that, similar to the breeding factory, the nature of the work in a vegetable shed factory impacts the currently used furniture in the living areas.

Based on the analysis of the eight different types of home-based workshops, it is found that commonly used household furniture is also placed in the production space. For example, sittings, electric lights, and fans are standard currently used furniture in each production space. Whether this furniture can adapt to production activities and whether villagers have new demands for household furniture due to changes in the use scene is the fourth stage to be studied.

4.6 Phase Two: Field Notes and Unstructured Interviews of Traditional Furniture

4.6.1 The Altar Table

An altar table is a piece of furniture used for placing offerings during rituals, also known as the "offering table". In the studied village, a traditional altar table is preserved in the pre-earthquake house of Q92716 (Figure 4.27). This altar table measured 0.61 meters in width, 1 meter in length, and 1 meter in height and was made from local poplar wood in Qanmadi village.

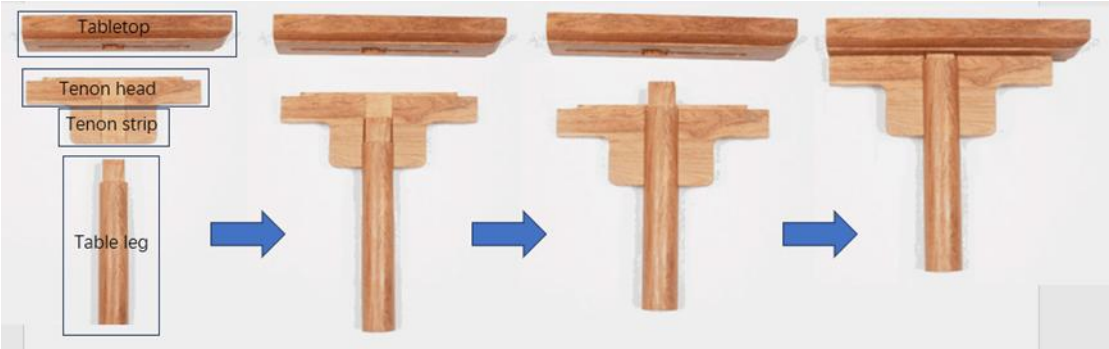


Figure 4.100 Structure of the altar table

The connection between the tabletop and the table legs employs a type of mortise and tenon joint known as a "Chuck tenon" consisting of a wooden tenon head and tenon strip (Figure 400). The chuck tenon connects the tabletop to the legs, ensuring a secure fit without using any nails. According to a local craftsman from Madi Village, this structure originated in the Song Dynasty, and tables and chairs from the Ming and Qing Dynasties also employed this structure. Although this type of altar table is no longer used, the chuck tenon is still widely used in wooden furniture today.

The owner of Q92716 mentioned, "*Not every household had one of these tables; our family was the only one in the village with an altar table placed beside the red*

wardrobe in the east room. It was used as a family altar, offering fruits, pork, and other items... When villagers held weddings, they would borrow our table to use as the 'heaven and earth table' for the ceremony...The old craftsman who made this altar table has passed away, and we no longer have access to buy such tables…We use writing desks or wall cabinets as substitutes for the altar table."



Figure 4.101 Q92707 "Bai tang" scene

From the owner's words, it is clear that this altar table had two primary uses: first, as a 'heaven and earth table' during weddings, and second, as a daily table for worshipping deities. On the wedding day, the altar table (Figure 4.102) was placed in the yard in front of the main house's south door, facing south. The tabletop was covered with a red cloth for good luck. Four plates filled with red dates, peanuts, longans, and melon seeds were placed on the table. The bride and groom would bow to heaven and earth in front of the altar table, a ritual known as "Bai tang" (bowing ceremony).

In daily life, the altar table served as a place for worshipping deities, positioned in the east or west room, with offerings such as incense, candles, fruits, and pork placed on top to bless the family. In addition, although this traditional altar table is no longer in use, villagers continue its function using other pieces of furniture (Figure 4.102).



Figure 4.102 Tables used as altar table in S92915, Q92715

4.6.2 Red Wardrobe



Figure 4.103 Q92718 red wardrobe

A red wardrobe, commonly known as a 'Tanggui', is a low-lying rectangular wardrobe with a lid. Typically, its dimensions range from 150 to 300 centimetres in length, 120 centimetres in width, and 100 centimetres in height. Above the wardrobe includes a fixed rear panel and a front panel that can be opened (Figure 4.103). The front surface of the wardrobe is equipped with brass latches (Table 4.1), and the base features legs that elevate it from the ground to prevent moisture accumulation.

Red wardrobes serve both storage and display purposes. The spacious and deep interior can store clothes, bedding, grains, cash, ration tickets, fabric coupons, and

other valuables. The top surface often holds mirrors, water pitchers, and study materials. In daily life, the red wardrobe is typically locked, and accessing items requires lifting the top panel.

Table 4.1 Red wardrobes in villages

S92915	
F92607	
Q92714	

F92606	
Q92717	

In the studied village, two materials are used for red wardrobes: pinewood (Table 4.2) and poplar wood (Figure 4.103). Pinewood is sourced from northeastern China, making it more expensive due to high transportation costs. In contrast, poplar wood is a local material from the Jidong area. It is more affordable and has moderate hardness. Whether pine or poplar wood is used, red wardrobes must undergo insect-proof treatment.

The owner of the poplar red wardrobe from Q92718 mentioned, "*This red wardrobe was part of my dowry when I got married in 1971. My family saved up to buy the cheapest poplar wood, and two carpenter uncles helped me make it. They painted it with bright red paint and then a layer of varnish, adding brass peach leaf latches. I placed the chest opposite the kang, and it looked beautiful. People from the village came to see it.*" The pine red wardrobe from Q92712 is cherished by its owner, who stated, "*It's my dowry item, a beloved possession. The chest contains some clothes, bedding, sweets, and pastries for my grandchildren. During the Cultural Revolution,*

it almost got burned, but I hid it at a relative's house to save it." They mentioned red wardrobes highlighted the wardrobe as part of the bride's dowry brought to the groom's home, It's traditional wedding furniture.

Additionally, red wardrobes are entirely coated with red paint and a layer of varnish. Depending on personal preference, the wardrobe's body can be carved with auspicious patterns such as flowers, birds, longevity peaches, and figures. At the same time, the legs often feature geometric patterns, like 'hui (回)' (Figure 4.103).

4.6.3 Wicker Suitcase



Figure 4.104 D93011 wicker suitcase

Figure 4.104 shows a wicker suitcase of D93011. The suitcase owner stated, "*This suitcase was used by my great-grandfather during his overseas studies at the end of the Qing Dynasty in 1910.*" The suitcase is well-preserved, measuring 61 cm in length, 38 cm in width, and 22 cm in height. The suitcase's body is woven from peeled willow branches, and its exterior is reinforced with red-brown iron strips. The interior is lined with a layer of purple floral paper. The junction between the lid and

the base features a handle and a gold peach-shaped lock. Like modern suitcases, it was an essential tool for travellers to store clothes and other items during journeys.

4.6.4 Handcrafted Carved Mirror



Figure 4.105 A handcrafted carved mirror of F92607

Figure 4.105 shows a handcrafted carved mirror from the F92607 household. This mirror was made by an elderly craftsman from Fangpao Village in 1954 while working at the Beijing July 1st Mirror Factory. It hangs above the red wardrobe in the F92607 home and is still in use. Because the carved mirror resembles a calligraphy couplet in shape, locals call it the 'couplet mirror' or 'four-panel screen'. The structure includes a large central mirror, left and right sections with couplets, and four handcrafted carved mirrors next to the couplets. These mirrors are often decorated with flowers, birds, insects, and fish, making them functional and aesthetically pleasing.

When viewed from the front, the handcrafted carved mirror appears to have a protruding three-dimensional effect, but touching the surface reveals it is flat. According to the craftsman who made this mirror, this visual effect is achieved by

processing the back of the glass. The manufacturing process utilizes the transparency of the glass, with designs of flowers, landscapes, animals, and people carved into the back using a rotating diamond wheel. A complete piece is formed after grinding, polishing, silver plating, and framing. Light refraction creates an illusion of raised and recessed patterns on the mirror, resulting in a striking visual impact.

The craftsman added, "*Every step, from preparing the solution, mixing, to blending, affects the quality of the final product. Making a small carved mirror takes at least a week, while a carved mirror of 1 square meter requires a month.*"

In making carved mirrors, 'carving' is the core technique and represents the pinnacle of this craft. The tools needed for carving are simple, primarily a grinding wheel. The artisan must hold the glass and bring it into contact with the rapidly rotating grinding wheel, using water as a medium and the wheel as a pen to engrave intricate designs. The marks left by the grinding wheel on the glass vary in depth by millimetres. Themes such as flowers, birds, fish, and insects are common on carved mirrors, with the lifelike feathers of birds and realistic petals of flowers being crafted stroke by stroke.

However, handcrafted carved mirrors and their manufacturing techniques are gradually disappearing. The craftsman from Fangpao Village noted, "*In 1993, the Beijing July 1st Mirror Factory closed down, and I lost my job. The skill of making handcrafted carved mirrors has gradually faded. In the past ten years, some young people have visited me to learn this craft. Although I am old, I teach anyone willing to learn, hoping to pass on this craft to future generations.*" In 2014, 'handcrafted carved mirror making' was declared an intangible cultural heritage of Changping District in Beijing.

4.6.5 Kang, Stove, and Furnace



Figure 4.106 D93016's kang is being built

The “kang” (heated bed) in northern China has a history spanning over two thousand years. Currently, in villages across Jidong, nearly every household's inner room is equipped with a kang, which serves not only as a bed but also provides essential heating during the winter. The kangs in Jidong are constructed from red bricks and cement, with their width matching the east-west dimension of the room, while the length and height are fixed at 190 cm and 50-60 cm, respectively. The construction of the kang in the D93016 household exemplifies this traditional technique (Figure 4.106).

Constructing a kang requires a high level of skill, needing experienced artisans. Craftsman Chen explained: “*There are many ways to build a kang, but the traditional method in Jidong is the ‘seven rows for the stove and eight rows for the kang.*”” Following the standard dimensions of red brick (24 cm in length, 5.3 cm in width, and 11.5 cm in height), the height of the kang in the inner room is built to 42.4 cm by stacking eight layers of bricks, to which an additional 10-15 cm of kang board and

cement thickness is added, resulting in a total height of 50-60 cm. This height is suitable for adults of 1.55-1.70 meters. The “traditional stove of seven rows” means the stove is one brick layer lower than the kang (about 37.1 cm). The interior of the kang is hollow, supported by brick columns under the kang board. This hollow design not only conserves materials but also enhances the insulation effect of the kang. Workers first build supporting walls along the edges of the kang, then lay the kang board on top, and finally, smooth the surface with cement. Once the cement is dry, the kang is complete.

The ends of the kang are typically equipped with a stove opening and a chimney opening, with the stove opening connected to the stove in the main room. When cooking, the heat and smoke generated from burning firewood flow through the kang, heating the kang board, and then the exhaust exits through the chimney. This design allows the heat from cooking to warm the kang as well, greatly improving energy efficiency. Additionally, the use of the kang carries social etiquette: the warmer end near the stove, known as the “kang head,” is usually reserved for elders or honoured guests, while the cooler “kang tail,” further from the stove, is allocated to younger family members. This arrangement reflects traditional intergenerational relationships and social hierarchy within rural households.

The stove in Jidong households is typically located in the main room or kitchen and serves as the primary cooking facility, with firewood as the main fuel, a practice that dates back to the Neolithic era. About the construction of the stove, first, the kang is built in the inner room, and then the traditional stove in the main room, with a wall separating the two. The stove, made from bricks and cement, generally comprises three main parts: the stove chamber, the countertop, and a large pot (Figure 107).



Figure 4.107 D93016's stove is being built

The stove chamber is constructed with bricks and has a fire opening on one side to facilitate fuel feeding. Above the stove chamber, a large pot is fixed, and the area around the pot is levelled with cement to form a countertop, allowing for the placement of smaller kitchen utensils. Additionally, a furnace (Figure 4.72) is typically installed beside the stove. This furnace, which emerged in the 1960s, is a heating device that primarily uses coal as fuel. Its pipes are connected to the stove opening, and the heat generated by burning coal passes through the kang via the chimney, enabling the furnace to independently heat the kang.

4.6.6 Kang Table

As early as the Ming and Qing Dynasties, the kang table was placed in the centre of the kang and used as a dining table. At present, it is used for daily dining and leisure in Jidong rural.



Figure 4.108 A mid-Qing Dynasty Zitan marble-topped kang table in F92606



Figure 4.109 Bottom of the Zitan marble-topped kang table in F92606

In the research village, the researcher discovered a mid-Qing Dynasty Zitan marble-topped kang table in F92606 (Figure 4.108), which is approximately three hundred years old. This kang table measures 60 cm in length, 40 cm in width, and 30 cm in height, with the tabletop inlaid with a single slab of marble featuring a cloud peak pattern. The table legs have three bends and are carved with grass patterns at the bottom, with thick, rounded supports added around the feet, giving a sense of stability. The apron of the kang table is adorned with Ruyi cloud patterns, hooked dragon patterns, and grass patterns. The Ruyi cloud pattern symbolizes good fortune and longevity, the hooked dragon pattern signifies prosperity, peace, and wealth, while the grass pattern represents continuous growth. Additionally, the bottom of the kang table was coated with lime to prevent insect infestation (Figure 4.109).



Figure 4.110 Kang table in the village

In the research village, now, every household has a kang table (Figure 4.110). These kang tables are rectangular, measuring 90 cm in length, 60 cm in width, and 40 cm in height, and are relatively heavy. Local carpenters make them from poplar wood and lack any decorative patterns. Regarding usage, villagers rarely place kang tables on the kang anymore, typically using them in the hall as dining tables.

4.6.7 Kang Cabinet

Kang cabinet is placed on the kang for storing bedding and clothes. It is also known as "Kang geda," "painted gold cabinets," and "Kang qin." In the study village, two traditional kang cabinets still exist.



Figure 4.111 Q92703 kang cabinet

Figure 4.111 shows the kang cabinet of household Q92703, which measures 155 cm in length, 40 cm in width, and 60 cm in height. It is made of poplar wood and is still in use. This cabinet is divided into three sections: the middle section for storing clothes and the sides for holding sewing tools or valuable items. The top of the cabinet is neatly stacked with bedding. The cabinet doors are decorated with floral ceramic tiles, and the cabinet body showcases the natural grain of the poplar wood. The owner explained, "*This cabinet is actually from the late Qing Dynasty. It used to have a dark red lacquer finish, but over time, much of it wore off, so we removed the rest. Where we couldn't clean it completely, we covered it with floral ceramic tiles... The cabinet originally had brass handles, but the children played with them, and they got lost. Now we can't find replacements.*"



Figure 4.112 A photograph of the pine kang cabinet from household F92606

Figure 4.112 shows a photograph of the pine kang cabinet from household F92606. This cabinet also dates back to the late Qing Dynasty and exhibits typical features of Qing furniture. It is divided into two sections, each about 1.2 meters high, which are stacked. The upper section is for bedding, while the lower section is used for storing clothes. The upper cabinet doors are made of glass, and the cabinet body is painted black. The lower section has double doors that can open, while the side doors are purely decorative and cannot be opened. The bottom of the kang cabinet has two drawers with small brass handles. The owner mentioned that the decorative patterns

on the cabinet were hand-painted by local artisans of that time. Due to its well-preserved condition, this cabinet was collected by the Tangshan Museum in September 2023.

4.7 Summary of Phase Two

In terms of currently used furniture, this phase summarizes the characteristics of furniture types and layouts in pre-earthquake houses, residential houses (Type A and Type B), and production-type houses in rural Jidong. This analysis provides a research background for subsequent studies on issues related to currently used furniture.

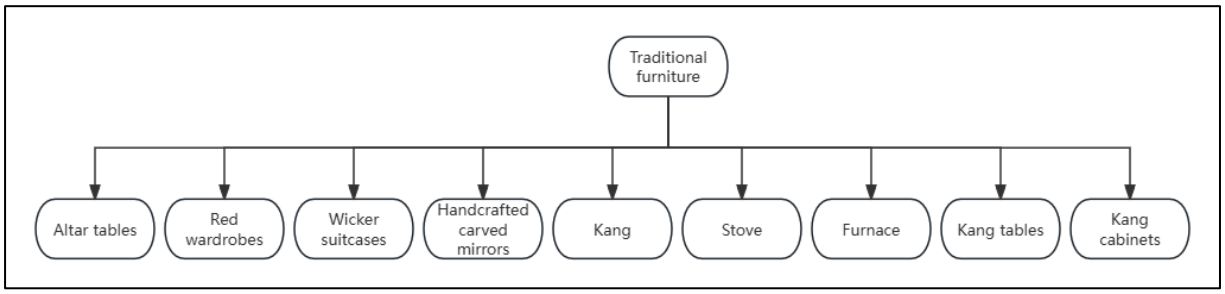


Figure 4.113 Nine categories of traditional furniture

Regarding traditional furniture, this phase identified nine categories (Figure 4.113), including altar tables, red wardrobes (made of pine and poplar), wicker suitcases, handcrafted carved mirrors, kang, stove, furnace, kang tables, and kang cabinets. The researcher conducted an in-depth investigation and description of the background, function, materials, decorative features, usage, size, and manufacturing techniques of these items. This detailed analysis addresses research question 1 and fills part of the research gap on traditional furniture in rural Jidong.

5 Findings and Analysis from Phase Three

5.1 Introduction

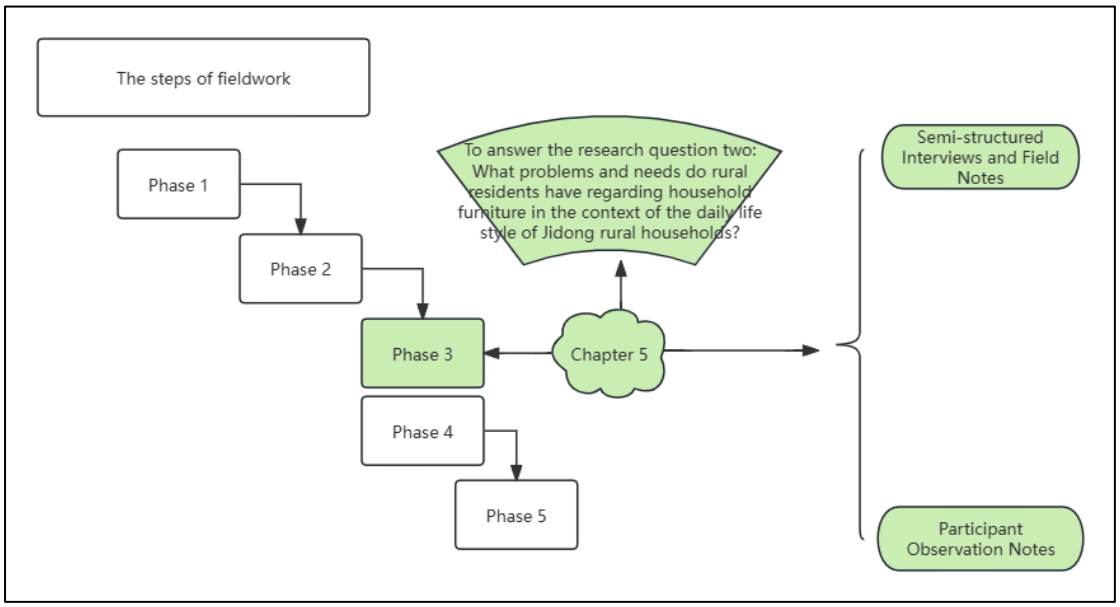


Figure 5.1 Introduction to chapter 5

This phase collected three key types of data on currently used furniture: interview data, field notes, and participant observation notes. All data were systematically analysed using thematic analysis methods to answer the research question, “What problems and needs do residents have regarding furniture in the context of the lifestyle of rural households in eastern Hebei?” (Figure 5.1).

During the thematic analysis, all data was converted into electronic and paper versions, and two rounds of coding were conducted. In the first round, manual coding was applied, involving a word-by-word reading of the paper records to identify relevant themes, roughly identifying 147 preliminary themes. These preliminary themes were then carefully classified and coded in NVivo, resulting in the identification of 10 main themes and 21 sub-themes (Figure 5.2). The first five themes, based on the analysis of interview data and field notes, are presented in

Section 5.2, while the latter five themes, derived from observation notes, are presented in Section 5.3. Section 5.4 summarizes all issues and needs related to currently used furniture in daily life, facilitating the development of design principles in Chapter 8.

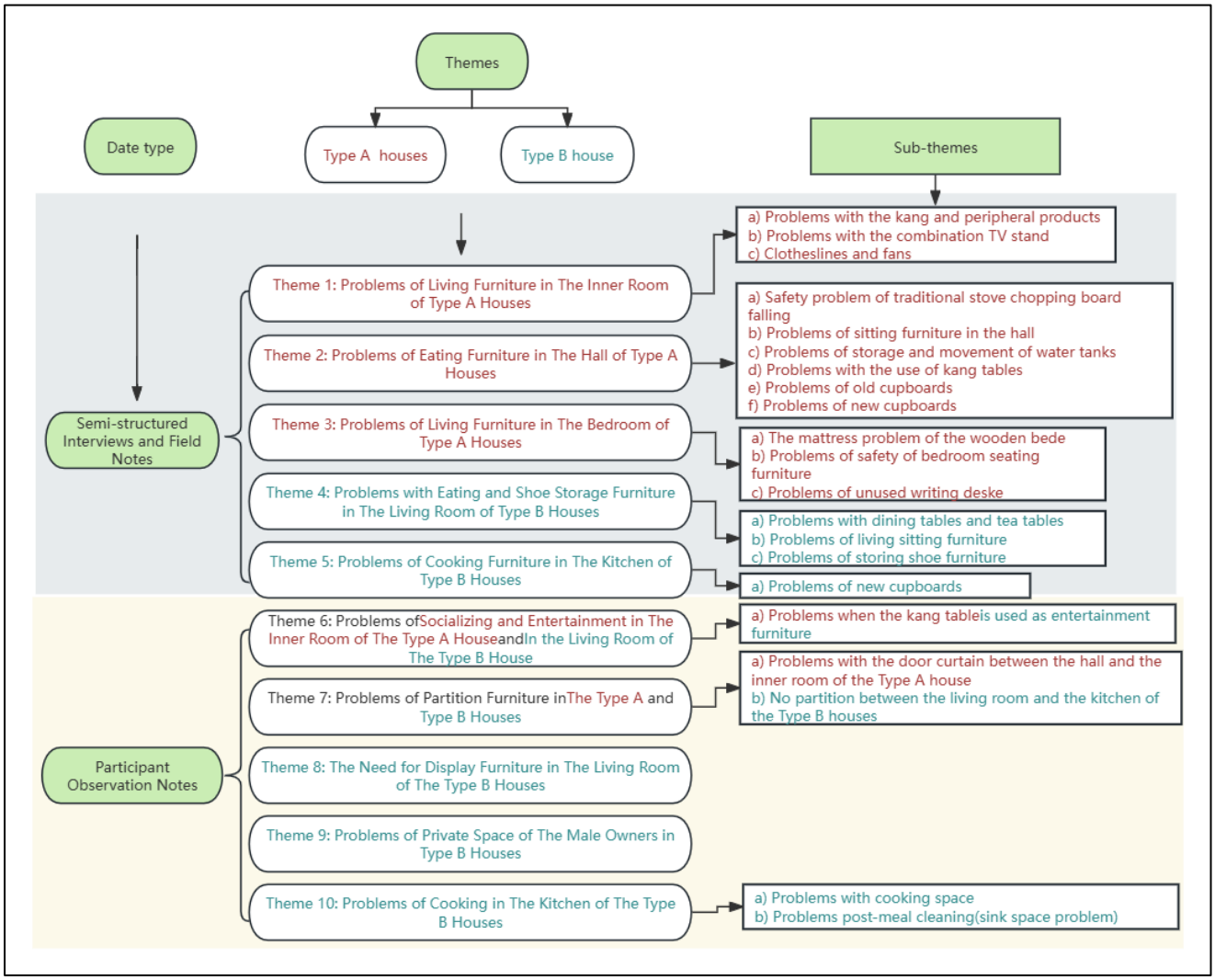


Figure 5.2 Themes and sub-themes of phase 3

5.2 Semi-structured Interviews and Field Notes

This section introduces and analyses data obtained from semi-structured interviews and field notes, revealing issues related to furniture use in Type A and Type B houses in rural Jidong (Figure 5.2). In the second phase of fieldwork, the types and layouts of furniture in both Type A and Type B residences were analysed. To gain an in-depth

understanding of furniture use across different household types, a total of 20 semi-structured interviews were conducted, including 10 respondents from Type A houses and 10 from Type B houses. Additionally, from January 23 to May 1, 2024, field notes were collected from 58 households, comprising 28 Type A and 30 Type B houses (Figure 5.3).

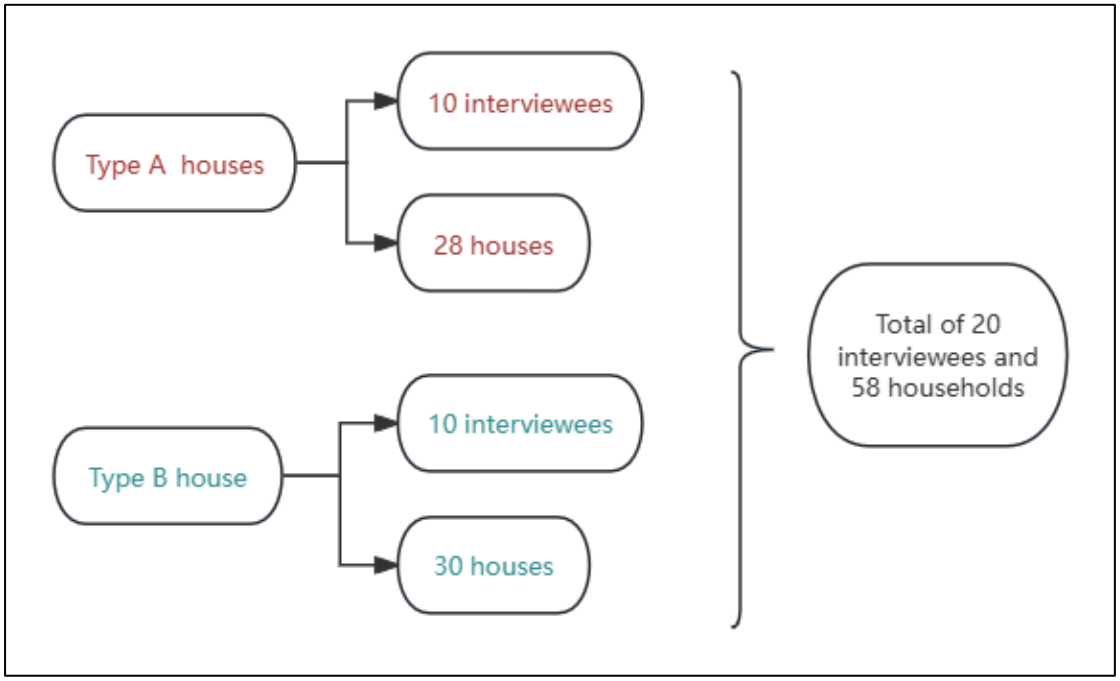


Figure 5.3 Composition of data for Phase 3 (Interviews and field notes)

Based on the different house types, this section systematically presents the issues in currently used furniture identified from interview data and field notes, organized into five themes (Table 5.1). The first two themes primarily address furniture issues in Type A houses, while the last three pertain to furniture issues in Type B houses. Each theme is divided into several sub-themes.

Table 5.1 Thematic analysis theme statistics: furniture problems in daily life (Semi-structured

interviews and field notes)

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
Theme 1: Problems of living furniture in the inner room of Type A houses	10/10	28/28
Theme 2: Problems of eating furniture in the hall of Type A houses	10/10	28/28
Theme 3: Problems of living furniture in the bedroom of Type B houses	10/10	30/30
Theme 4: Problems with eating and shoe storage furniture in the living room of Type B houses	10/10	30/30
Theam5: Problems of cooking furniture in the kitchen of Type B houses	10/10	30/30

5.2.1 Theme 1: Problems of Living Furniture in The Inner Room of Type A Houses

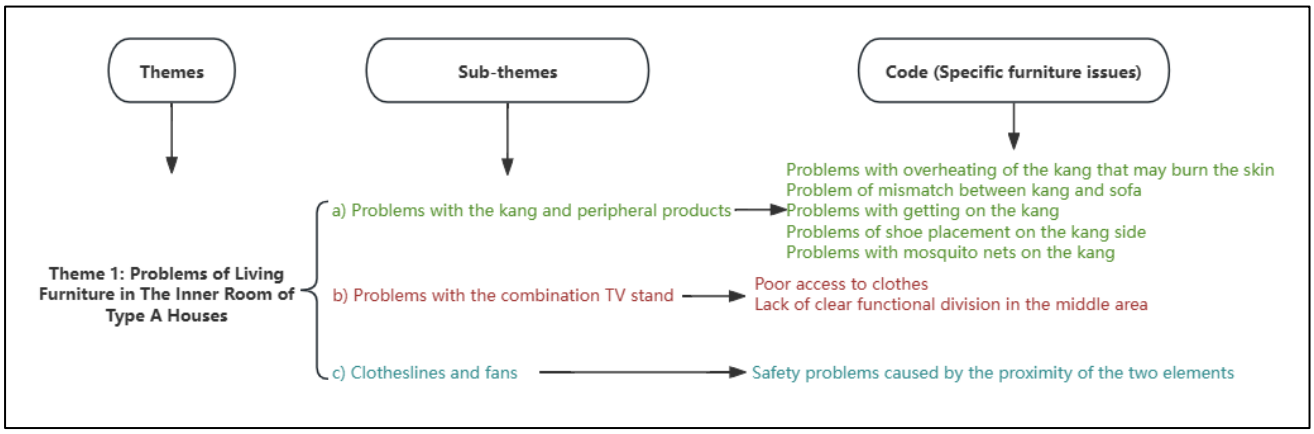


Figure 5.4 Detailed information on Theme 1 of Phase 3

Theme 1 primarily explores issues related to indoor furniture in Type A houses. Figure 5.4 presents the sub-themes within Theme 1 and their corresponding codes. Table 5.2 lists the number of households in which each of the three sub-themes was mentioned in the field notes, as well as the number of respondents who referenced these themes in the interview data. Figure 5.5 illustrates the frequency with which each code was mentioned across households in the field notes, as well as the frequency with which each code was discussed by the 10 respondents. Based on these data, it is evident that although each code was mentioned, there are notable

differences in the number of households referencing these codes and the frequency with which they were discussed by respondents. The next subsections need to analyse these codes in detail.

Table 5.2 Sub-themes of Theme 1: Problems of living furniture in the inner room of Type A houses

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
Theme 1: Problems of living furniture in the inner room of Type A houses	10/10	28/28
a) Problems with the kang and peripheral products	10/10	28/28
b) Problems with the combination TV stand	10/10	28/27
c) Clotheslines and fans	10/8	28/27

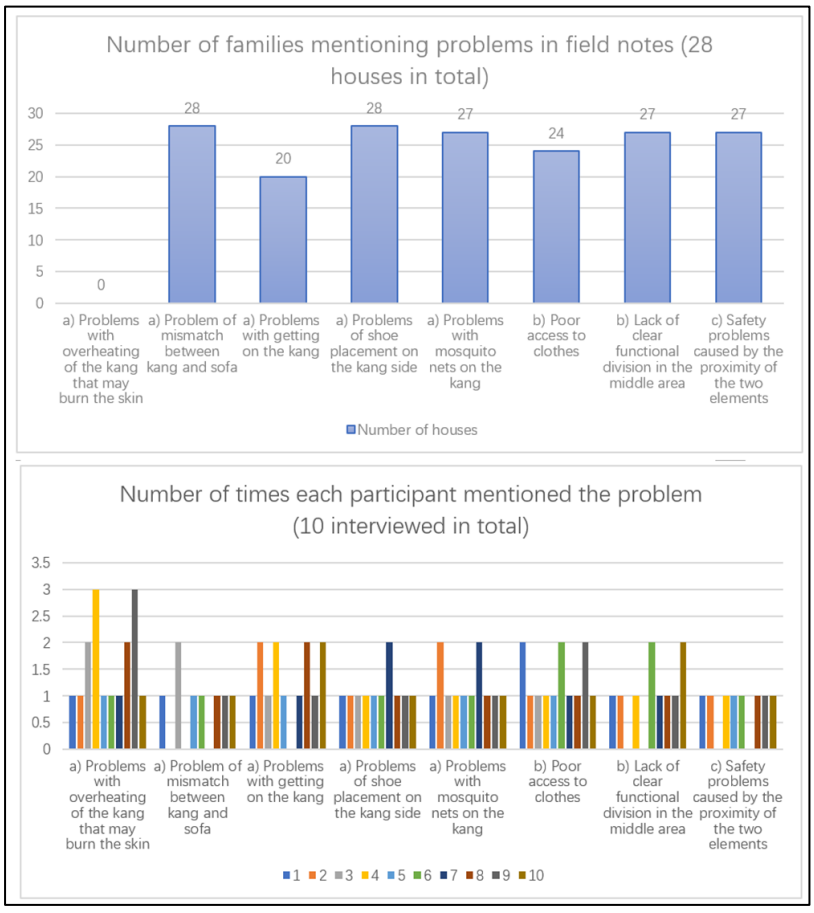


Figure 5.5 Coding of theme 1

a) Problems with the kang and peripheral products

The issues related to the use of the kang by villagers can be divided into five major problems. (Table 5.3).

Table 5.3 Statistics on the problems with kang and peripheral products

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
a) Problems with the kang and peripheral products	10/10	28/28
Problems with overheating of the kang that may burn the skin	10/10	0
Problem of mismatch between kang and sofa	10/7	28/28
Problems with getting on the kang	10/9	28/20
Problems of shoe placement on the kang side	10/10	28/28
Problems with mosquito nets on the kang	10/10	28/27

A common issue identified is skin burns caused by overheating of the kang. All 10 interviewees mentioned this issue. For example, the respondent from household Q92710 stated, "*We adults are fine, but it's mainly the children, who have delicate skin, so I put a thicker blanket on the kang to prevent the children from getting burned.*"

To mitigate the problem of excessive heat on the kang surface, some households have implemented modifications. The respondent from household D93004 mentioned that they placed a blanket on the kang to lower its surface temperature. However, he noted that although the blanket is inexpensive, it only provides localized temperature control on the kang surface and does not effectively enhance the warmth of the entire room. In other interviews, nine respondents reported installing heating devices, such as air conditioners or electric heaters; however, due to high electricity costs, these devices

are used sparingly. Additionally, field notes recorded that seven households reinforced the kang surface with a layer of wooden boards to create an insulating layer to prevent burns from excessive heat. However, prolonged exposure to the kang's damp heat has led to mould growth on the wooden boards, raising hygiene concerns. This indicates that while these measures offer partial solutions, there are still limitations, suggesting a need for more scientifically informed design strategies to optimize the kang surface.

The second problem is that the mismatch between the kang and the sofa was mentioned by seven interviewees and was prominently recorded in the field notes. The researcher observed that when the kang and sofa are used together, one person sits on the sofa while another sits on the kang, resulting in a close distance but a significant difference in seating height. Prolonged sitting in this arrangement can cause discomfort due to the disparity in eye levels. Respondent S92915 remarked, *"Our sofa is lower than the kang, every time I sit on the kang and my husband sits on the sofa to talk, he always has to look up at me, and I look down at him, which is really hard on my neck after a long time, and sometimes my back and waist hurt."* This highlights the inconvenience and physical discomfort caused by the height difference and proximity when the kang and sofa are used together. Therefore, adjusting the furniture layout or choosing a sofa with a matching height can effectively alleviate this issue and enhance comfort.

The third problem of difficulty in getting on the kang is mainly targeted at adults whose height is less than 1.55 meters, seniors, and children. Nine interviewees directly or indirectly mentioned this issue. Respondent F92606 noted, "*It's super hard for me to carry my child to the kang sometimes. I have bad knees and rheumatism, so I need to be very careful every time I get on the kang, and sometimes I really wish the kang could be a little bit lower*." Field notes recorded a scenario where a teenager

under 1.55 meters attempted to use the kang, “*First he put his hands on the edge of the kang, then he took off his shoes, jumped six times, and finally hit his foot on the edge of the kang.*” The researcher also observed six elderly individuals preparing to get on the kang. They all required assistance from families to safely get on the kang.

These interviews and field notes indicate that adults shorter than 1.55 meters, seniors, and children face significant challenges when accessing the kang. These challenges affect their daily lives and increase their risk of injury, highlighting the need for attention to these issues from a design perspective.

The fourth issue is the shoes' placement on the kang side. Removing shoes before getting on the kang is a local tradition, but the disorganized placement of shoes on the floor near the kang poses an obstacle for those walking around. In all ten interviews, participants expressed serious concern about this issue. Respondent F92603 stated, “*My kid's tripped over shoes twice already, and the scar on his forehead is from hitting the edge of the kang after tripping.*” Respondent Q92708 mentioned, "*My father fell once because of the messy shoes when he got up at night. Later, I bought a night light.*"

Field notes frequently described this issue, with phrases and sentences like 'the floor near the kang is cluttered with 8 shoes' 'seven pairs of adult shoes and three pairs of children's shoes are scattered on the floor' and 'The mother reminds the children for the third time to watch the shoes on the floor when they get off the kang'.

These data suggest that while removing shoes before getting on the kang is a common tradition in many households, the resulting clutter creates inconvenience and safety hazards. To address this issue, two female heads of households, Q92708 and S92915,

suggested organizing the space around the kang for shoe storage, such as installing a fixed shoe rack to prevent the cluttered arrangement of shoes and reduce safety risks.

Fifthly, is the issue of mosquito nets on the kang was a common issue. Mosquito nets are hung over the kang mainly to prevent mosquito bites. The nets are secured at the four corners by ropes attached to ceiling beams or nails in the wall (Figure 5.6). Before sleeping, the net is lowered, and when not in use, it is rolled up and hung at the top of the room, creating a suspended structure. In interviews, when showing the researcher how they use mosquito nets, all ten participants pointed out various issues with them.



Figure 5.6 F92607 mosquito nets

Respondent S92903 remarked, "*The most traditional mosquito net that I use at home, which is actually a window screen, I don't think it works well, its mesh is too big to keep mosquitoes out. I want to change it, but the mosquito nets on the market are not the right size and they are especially expensive.*" Respondent D93001 said, "*I bought a mosquito net from the Internet before, only enough to sleep three people, my family of six people, it is not sleeping, and then idle, now I use this is, I bought gauze from the Internet, the bracket is my own welding. I think it works pretty well.*"

The main problem with the current traditional mosquito nets is that they do not effectively prevent mosquitoes from entering, and the ones available on the market

are too small to cover the entire kang. This has led some families to create mosquito nets using wire and steel rods. Field notes recorded four such families but had safety problems. In two families with children, the mothers mentioned that the wire had scratched their children while crawling on the kang. Thus, while some families have attempted to solve the problem of unsuitable market-sized mosquito nets by making their own, this approach has various safety and practicality issues.

b) Problems with the combination TV stand

Table 5.4 Statistics on the problems with the combination TV stand

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
b) Problems with the combination TV stand	10/10	28/27
Poor access to clothes	10/10	28/24
Lack of clear functional division in the middle area	10/8	28/27

The combination TV stand (Figure 4.44) is a multifunctional piece of furniture divided into three sections: left, centre, and right. The left and right sections are enclosed for storing clothes and bedding, while the centre section is an open display area that can hold a television as well as some wash items, with its mirror surface serving as a decorative element. The issues related to the combination TV stand can be categorized into two main aspects: poor access to clothes and lack of clear functional division in the middle area (Table 5.4).

Regarding the difficulty in retrieving clothes from the combination TV stand, all ten interview participants mentioned. S92915 commented, "*There are no compartments in this cupboard and all the clothes are piled up together, so when you take out the clothes at the bottom you always have to take out the ones on top, which is very*

troublesome." Field notes also recorded numerous instances highlighting this issue, such as: "*Ms. Li first took out all the clothes on top, then found the white sweater she was looking for, and finally put the clothes back.*"

These data show that users need to bend or squat frequently to reach the clothes of the combination TV stand, which is especially challenging for seniors. So, it is necessary to improve the design of this type of stand.

Regarding the issue of the central section lacking functional zoning, eight participants explicitly mentioned this problem. F92603 remarked, "*My home is just this one big piece of furniture, everything is put here, I not only want to place the TV, charging cable, these scattered small objects, I also need to put some decorations.*"

In the field notes, when observing the combination TV stand in S92902's home, the researcher noted, "*The first impression was one of visual overload: the surface was covered with various items, leaving almost no space. Cable wires were tangled like snakes. The centre section housed the television, with a drawer underneath containing keys, nail clippers, medication, small metal boxes, and other miscellaneous items. The right display stand was used for storing books, and children's toys, while the left display stand held washing products such as mirrors, combs, tissues, toothbrushes, and toothpaste. The upper drawers were reserved for fragile and valuable items like tea sets, gourds, and inkstones. As Ms Liu complained to the researcher, 'I always forget where I put the remote; it's been days, and I still can't find it.*"

These show that while the central section of the combination TV stand offers significant storage potential, the lack of clear functional compartmentalization results in disorganized item placement. It is crucial to address this issue.

c) Clotheslines and fans

Table 5.5 Statistics on the problems of clotheslines and fans

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
c) Clotheslines and fans	10/8	28/27
Safety problems caused by the proximity of the two elements	10/8	28/27

In the village, it was found that it is common for villagers to hang clotheslines in the inner room (Figure 5.7). However, the close proximity of the clothesline to the ceiling fans resulted in potential safety hazards when using the fan. This issue was mentioned by eight respondents and by 27 families in the field notes (Table 5.5). F92606 stated, "*When the fan is on in my house, the clothes are always blown around, and once they were even rolled into the fan, which is particularly dangerous.*" Therefore, the clothes hanging on the clothesline may pose significant safety risks when using the ceiling fan. This issue needs to be addressed by adjusting the clothesline's position or designing more reasonable drying equipment.



Figure 5.7 Clotheslines and fans of F92607

5.2.2 Theme 2: Problems of Eating Furniture in The Hall of Type A Houses

Theme 2 focused on furniture issues in Type A houses, with six sub-themes and their corresponding codes (Figure 5.8). Table 5.6 presents the field notes and interview

data for the six sub-themes. Figures 5.9 presents the frequency of each code in field notes and respondent discussions. This suggests that even though each sub-theme or code was recorded, the frequency with which it was mentioned in the interviews produced variability.

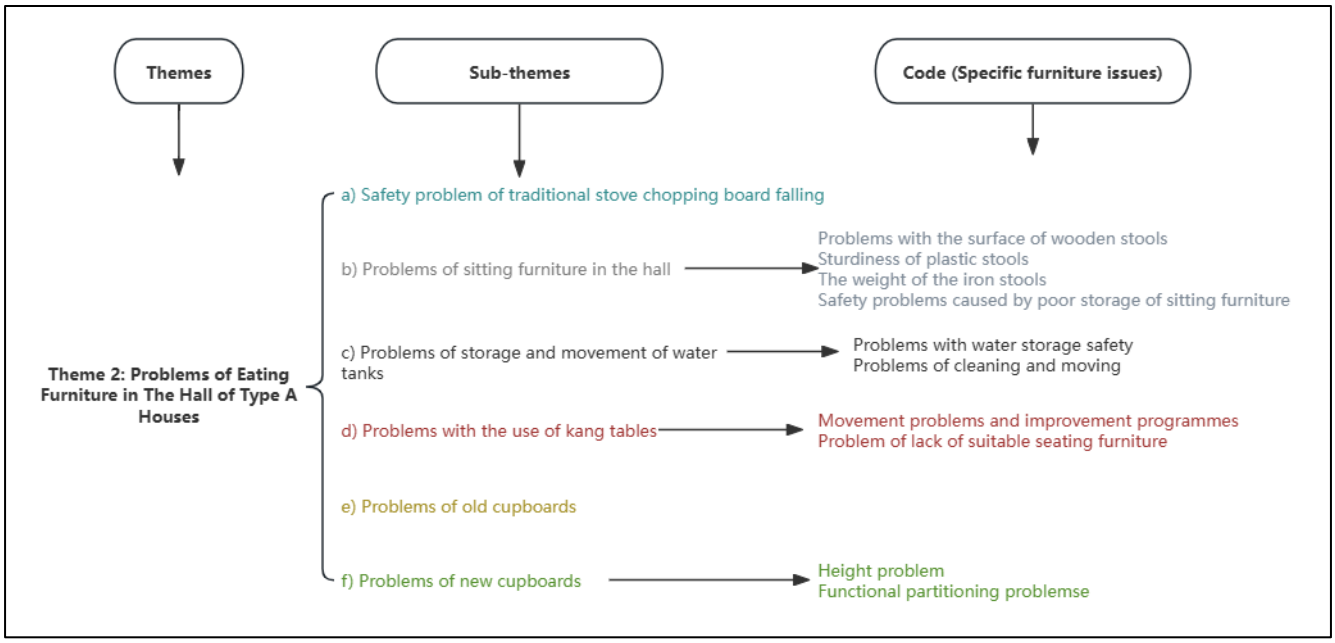


Figure 5.8 Detailed information on Theme 2 of Phase 3

Table 5.6 Sub-themes of Theme 2: Problems of eating furniture in the hall of Type A houses

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
Theme 2: Problems of eating furniture in the hall of Type A houses	10/10	28/28
a) Safety problem of traditional stove chopping board falling	10/10	28/28
b) Problems of sitting furniture in the hall	10/10	28/24
c) Problems of storage and movement of water tanks	10/10	28/28
d) Problems with the use of kang tables	10/8	28/27
e) Problems of old cupboards	10/10	28/28
f) Problems of new cupboards	10/7	28/28



Figure 5.9 Coding of theme 2

a) Safety problem of chopping board falling

It is common for villagers to place a simple chopping board on top of the stove to extend the working surface, typically used for cutting vegetables (Figure 5.10). However, this makeshift board is not fixed and can easily slip, potentially leading to injuries. This issue was mentioned by all ten respondents and 28 families (Table 5.6). Q92712 remarked, "*The stove in our kitchen isn't big enough, so we put a wooden board on top to create more space for cutting vegetables. However, there have been several instances where the board slipped*" Q92710 shared a similar experience: "*One time, I was cutting vegetables when the board suddenly slid, and the cutting board and vegetables fell to the floor. The first toenail on my right foot was completely crushed.*" D93001 added, "*One time, the child touched the board and it fell and hit him, but it wasn't a big deal.*"



Figure 5.10 Simple chopping board of D93001

The above description indicates that while using a simple wooden chopping board on the stove as an additional working surface is convenient for daily life, its instability and tendency to slip can lead to falls, posing a risk of injury, particularly for seniors and children. Therefore, improving the stove design or finding a more stable solution for the chopping board is an urgent issue.

b) Problems of sitting furniture

Based on field notes, the researcher identified three types of sitting currently in the hall: poplar wooden stools, plastic stools, and iron ring stools (Figure 4.58). The villagers handcraft poplar wooden stools, which come in three forms: small, square, and small folding stools (Figure 5.11). The villagers commercially purchase plastic and iron ring stools (Figure 5.12). These two types of stools are stackable, which helps save space in the main room when stored together.



Figure 5.11 Small, square, and small folding stools in S92904 and S92910



Figure 5.12 Plastic and iron ring stools in D93009 and D93014

Table 5.7 Statistics on the problems of sitting furniture in the hall

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
b) Problems of sitting furniture in the hall	10/10	28/24
Problems with the surface of wooden stools	10/6	28/22
Sturdiness of plastic stools	10/4	28/24
The weight of the iron stools	10/6	28/20
Safety problems caused by poor storage of sitting furniture	10/10	28/23

In interviews, all ten respondents reported frequent use of these three types of stools, but they also raised concerns (Table 5.7). Six respondents mentioned that the seats of the wooden stools are too narrow, making them uncomfortable to sit on. Four respondents pointed out plastic stools are prone to breakage and lack sturdiness. Six respondents noted that iron ring stools are heavy and uncomfortable to sit on. These issues indicate that these stools do not adequately meet the villagers' needs.

Moreover, the field notes revealed that the researcher observed all three types of stools in every household, each with at least seven stools. In the interview data, all ten participants mentioned that these stools pose safety risks to their families, particularly seniors and children. Q92708 stated, "*Last year, my mum went to the toilet in the middle of the night and tripped over an iron ring stool in the hall.*" D93011 added, "*I have a young grandson who often bumps into stools while running around.*"

In summary, while villagers require a significant number of stools in their homes, the various types of stools are difficult to store, and these scattered stools pose a significant safety threat to seniors and children. To address this issue, six respondents expressed a desire to purchase stools that are easier to store and multifunctional, capable of being paired with taller square or round tables as well as desks or kangs. These insights provide important guidance for stool design.

c) Problems of storage and movement of water tanks

Table 5.8 Statistics on the problems of storage and movement of water tanks

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
c) Problems of storage and movement of water tanks	10/10	28/28
Problems with water storage safety	10/10	28/24
Problems of cleaning and moving	10/10	28/28

Two main problems are associated with using water tanks (Figure 4.56) in the hall (Table 5.8). First, all 10 respondents pointed to safety issues with the tanks. Most rural households currently use old water tanks that have developed internal cracks. These cracks pose a significant risk during winter when the water inside freezes and expands, causing the cracks to widen. This expansion compromises the structural integrity of the water tanks, making them prone to breaking under even minor external

forces. F92606 noted, "*Last winter, a water tank in our home cracked due to a sudden drop in temperature and almost hit someone.*" This suggests that the new design must enhance the safety.

Second, all families in field notes involve the difficulty of cleaning and moving the water tanks. When filled with water, the tanks become extremely heavy, making them challenging to move and clean. A typical example from the field notes describes a daily water storage scene: "*Auntie Wang and her son busily catching water. They first cleaned the water tank, which was so heavy that it could only be tilted slightly, and scrubbed the inside with a rag... Then store the water. Auntie Wang said: 'Every day we have to do this...It was very difficult to move a full tank. We only move the tank when it was not full.*'"



Figure 5.13 D93011 red plastic bucket

This example highlights the significant inconvenience associated with the weight and immobility of old water tanks when they are full. Four households in the village have switched to using red plastic buckets (Figure 5.13) as an alternative for water storage. However, the field notes reveal that this substitute has similar problems: when the water pressure is high, the plastic buckets are not strong enough and are prone to damage. Therefore, there is a pressing need to rethink the design of water storage tools.

d) Problems with the kang tables

Table 5.9 Statistics on the problems with the kang tables

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
d) Problems with the kang tables	10/8	28/22
Movement problems and improvement programmes	10/8	28/22
Problem of lack of suitable seating furniture	10/7	28/15

The kang table is widely used in the village. Although relatively small, it is commonly used as a dining table (Figure 4.110). When in use, it is placed in the centre of the hall, and when not in use, it is leaned against a wall. There are two issues associated with kang tables (Table 5.9).

First, the weight of the kang table makes it inconvenient to move. In interviews, eight respondents highlighted this problem. F92603 mentioned, "*When I was younger, it wasn't an issue, but now that I'm older, I always have to ask my son to move it.*" Additionally, two respondents suggested potential improvements, such as designing the table to be lighter or adding lockable wheels to the legs to address the mobility issue.



Figure 5.14 The kang table as a dining table in the F92607 hall

Second, seven respondents mentioned the lack of suitable seating furniture for the kang table. Designed initially as furniture for use on the kang, the table's height of 40 centimetres is ideal when used on the kang. However, the kang table is now commonly placed in the hall and used as a dining table (Figure 5.14). In this context, the lack of appropriate seating becomes a significant issue. One example recorded in the field notes reads: "*At Uncle Wang's house, I noticed that their kang table was placed in the centre of the living room, serving as the family's main dining table. The four family members sat around the table on small wooden stools. Uncle Wang explained, 'These chairs are indeed a little high, and the kang table is indeed too low to be uncomfortable after a long time.' The children sat on small stools, with their backs straight, but soon began fidgeting, looking restless. Uncle Wang's wife commented, 'I bend my back to eat, which is uncomfortable after a long time.*"

Field notes show that many families used kang tables as dining tables, but because there were no well-designed chairs in the market that matched the height of kang tables, villagers had to use small stools, resulting in poor posture and physical discomfort. Therefore, it is necessary to design and provide seats that match the height of the kang table, thereby improving the dining experience of villagers.

e) Problems of old cupboards



Figure 5.15 Old cupboard in Q92718 and F92603

The figure 5.15 illustrates the old cupboards placed in the hall for storing dishes and food. This cupboard is mainly made of poplar wood and handmade by local craftsmen. The upper part of the cupboard includes a transparent glass section, with doors that typically open by sliding or using handles. The cupboard's surface is often decorated with themes of flowers, birds, fish, and insects, adding a certain aesthetic appeal.

In interviews, ten respondents mentioned the inadequacies of the old cupboard in storing tableware (Table 5.6). D93001 stated, "*We have a lot more tableware now than we did before, such as large bowls, small dishes, plates, and various cooking pots. The space in the old cupboard is simply not enough.*" However, when the researcher inquired about potential solutions, all 10 respondents and 28 families indicated they had already installed new cupboards in the hall. These new cupboards provide more storage space for tableware, addressing the storage limitations of the old cupboards.

f) Problems of new cupboards

Table 5.10 Statistics on the problems of new cupboards

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
f) Problems of new cupboards	10/7	28/28
Height problem	10/7	28/28
Functional partitioning problems	10/6	28/25

The new cupboard is a self-assembly unit purchased by the villagers. The upper part features a marble countertop for cooking and placing kitchenware, while the lower part is designated for storing kitchen utensils and tableware. It presents two primary issues when used in the hall (Table 5.10).



Figure 5.16 Cooking on the new cupboard in F92607

Cupboard height issues were documented in field notes for all 28 families. Currently, the new cupboards in the village are standardized at a height of 60 centimetres. For village women whose average height is between 150-155 centimetres, this height necessitates bending over during cooking (Figure 5.16). One case recorded in the field notes illustrates this problem: "*At Mrs Zhang's home. I observed her bent over eight times while cooking with the new cupboard. The longest instance lasted 16 minutes while she was preparing ingredients. During the cooking process, she complained*

about back pain five times." This observation highlights that the height of the new cupboards is unsuitable for most, villagers and needs to be adjusted to a more ergonomically appropriate level to improve the users' comfort and health.

The second issue is the new cupboard's lack of clearly defined functional compartments. This issue was documented in 25 families in the field notes. For example, "*The upper layer is filled with condiments, tableware, and miscellaneous items, while the lower layer is cluttered with pots and other kitchen utensils. Mrs Wang expressed frustration, saying that every time they cook, she has to search for what she needs, with condiments and pots all mixed, making it impossible to find anything...At Mrs Li's house, she rummages through the entire upper layer of the cupboard just to find a salt bottle.*" In these examples the current design only divides the cupboard into two simple layers, lacking rational functional zoning, which causes considerable inconvenience for the villagers during use. Therefore, new cupboard designs need partition design.

5.2.3 Theme 3: Problems of Living Furniture in The Bedroom of Type B Houses

Theme 3 documented furniture issues in Type B houses, categorized into three sub-themes (Figure 5.17). The corresponding field notes and interview data are summarized in Table 5.11, and Figure 5.18 shows the frequency with which they were recorded. These need to be analysed in detail next.

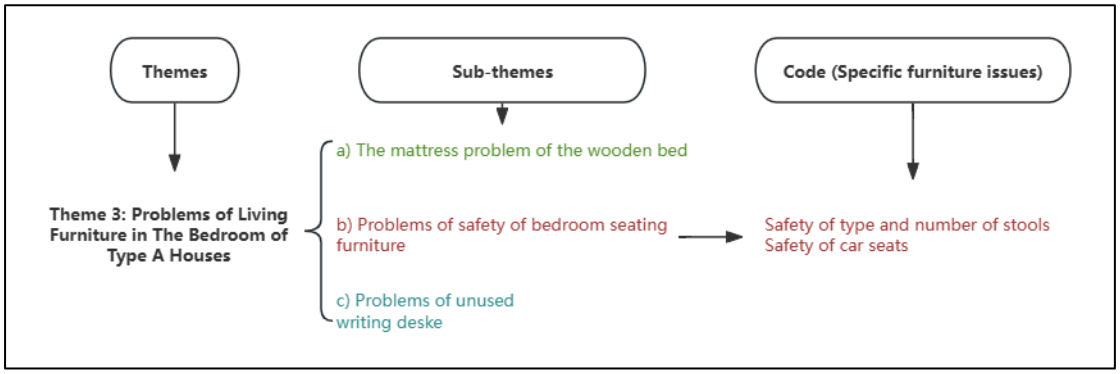


Figure 5.17 Detailed information on Theme 3 of Phase 3

Table 5.11 Sub-themes of Theme 3: Problems of living furniture in the bedroom of Type B houses

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
Theme 3: Problems of living furniture in the bedroom of Type B houses	10/10	30/30
a) The mattress problem of the wooden bed	10/10	30/27
b) Problems of safety of bedroom seating furniture	10/10	30/29
c) Problems of unused writing desk	10/10	30/30

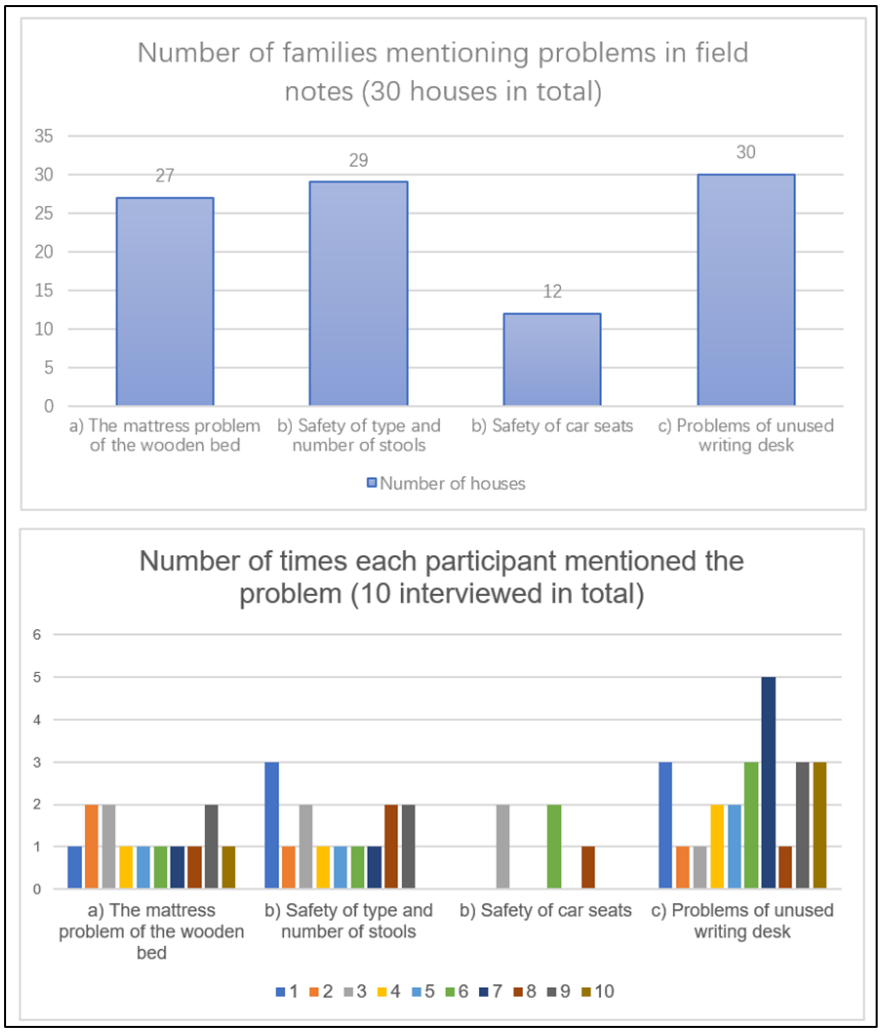


Figure 5.18 Coding of theme 3

a) The mattress problem of the wooden bed

The wooden bed, resembling a Japanese tatami mat, is a square-shaped piece of furniture with a side length of 2 meters. It is typically used in the secondary bedrooms of Type B houses, replacing traditional kang (Figure 5.19). This bed type is primarily utilized by newlywed couples and adolescents in the village. Influenced by traditional beliefs, many elderly villagers consider soft mattresses detrimental to health. Consequently, villagers do not place soft mattresses on the bed; instead, they spread 4 to 5 layers of old cotton quilts to achieve a moderately firm sleeping surface. However, this practice leads to unevenness in the bed surface, a problem mentioned by all ten interviewees (Table 5.11). For instance, respondent Q92715 stated: "*All our*

villages are like this, laying 4-5 layers of old quilts. My family spreads 4 layers and the hardness are just right, but it is a bit uneven underneath the body when you lie on it... Because the bed is big and the old quilts are small, the mattress is made of one small quilt after another, and when you sleep, you may lie in the gap between the two old quilts, which makes your body uneven ... The main reason is that there are no suitable firm mattresses on the market; they are all very soft mattresses, which are too soft for us and even more uncomfortable."



Figure 5.19 The wooden bed in Q92711 and D93011, mattress(D93011) made of old quilts

Due to the lack of mattresses with suitable dimensions and firmness on the market, villagers resort to piecing together and layering old quilts to fit the bed's dimensions and adjust the surface's firmness. However, this approach results in an uneven bed surface, negatively impacting their sleep quality and comfort. Therefore, it is necessary for designers to develop a mattress with dimensions of 2 meters by 2 meters and a thickness of 3-4 centimetres (equivalent to the thickness of 4-5 layered old quilts) to enhance the comfort of the wooden board bed.

b) Problem of safety of bedroom seating furniture



Figure 5.20 Two wooden bedroom seating in S92912 and three wooden bedroom seating in Q92711



Figure 5.21 S92903 car seats as bedroom seating



Figure 5.22 Plastic woven tea table and chairs of D93012

Currently, there are no standardized seating arrangements in the bedrooms of Type B houses in the village, and the seating can generally be categorized into three types: two or three wooden bedroom seating (Figure 5.20), seating that villagers have modified themselves (Figure 5.21; Figure 5.22), and variously shaped sitting stools (Figure 4.58). Ten respondents reported that their homes typically have more than two types of seating. While none of the respondents raised issues with the first type of wooden chairs, there were significant concerns about the second and third types of seating (Table 5.12).

Table 5.12 Statistics on the safety problem of bedroom seating furniture

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
b) Problems of safety of bedroom seating furniture	10/10	30/29
Safety of type and number of stools	10/10	30/29
Safety of car seats	10/3	30/12

Firstly, the large number of sitting stools with different shapes in the bedroom presents a safety hazard. This was unanimously mentioned by the ten respondents. Respondent S92912 stated: "*I'm very worried about the children tripping over them when they get up at night, so I move all the stools against the wall before going to bed.*" This indicates that the various sitting stools occupy considerable space and pose storage challenges, thereby increasing safety risks.

Secondly, the seating that villagers have modified themselves presents obvious safety hazards. For example, 11 households have repurposed discarded car seats as bedroom seating. Respondent F92610 noted: "*These seats were removed from scrapped cars and initially used as sofas, thinking it would save money, although the seat bases are not very stable, we are just careful.*" Additionally, the field notes recorded that an older adult had retrieved a plastic woven tea table and chairs from a discarded furniture factory (Figure 5.22). He reinforced the seating bases with wire, stating that the tea table could support lighter objects.

In addition, ten respondents expressed their hopes and suggestions for improving bedroom seating. Six respondents believed the seats should be standardized and preferred wooden seating. Five respondents mentioned that they hoped these seats could have storage functions to reduce clutter in the bedroom and enhance safety.

Therefore, designers must develop seating solutions that meet safety standards and fulfil villagers' economic and practical needs.

c) Problems of unused writing desk



Figure 5.23 Q92715 writing desk



Figure 5.24 S92903 computer desk

Writing desks are very common in the surveyed villages, typically ranging in height from 75 to 80 centimetres. They can be classified into two main types: firstly, those purchased by villagers as part of their wedding furniture around twenty years ago, crafted by local artisans (Figure 5.23), and secondly, computer desks acquired from the market in recent years, which are repurposed as writing desks (Figure 5.24). S92903 noted that these computer desks are discarded furniture from urban areas and do not offer a satisfactory user experience.

These two types of desks were primarily used for children's studies a decade ago. However, current research shows that, regardless of whether the household has

children, these desks are predominantly used to pile miscellaneous items, books, and household goods, leading to their underutilization. This issue was mentioned by 10 interviewees and recorded 23 times in the field notes (Table 5.11).

In families with children, three interviewees highlighted specific challenges. Q92715 stated: "*It is largely unused now. My children find the writing desk too high, and there is no matching chair to use it. Now it's just used to put some sundries and daily necessities. My child likes to write lying down on the kang, and sometimes on the kang table, not on the writing desk anyway.*" This clearly illustrates the issues with the writing desk's height and the need for appropriate seating, resulting in its underutilization.

In families without children, seven interviewees provided suggestions for repurposing writing desks. Two interviewees have already converted their writing desks into bedroom TV stands. Three expressed a desire to transform their desks into dressing tables. Additionally, two interviewees suggested converting writing desks into display cabinets for showcasing collectables, decorations, and photographs.

In summary, addressing the issue of underutilized writing desks involves two key recommendations: for families with children, the desk's height should be adjusted and appropriate chairs provided to make them more suitable for children's use; for families without children, writing desks can be repurposed into TV stands, dressing tables, or display cabinets based on specific needs. This approach not only enhances the utilization of desks but also improves the living quality of the villagers.

5.2.4 Theme 4: Problems with Eating and Shoe Storage Furniture in The Living Room of Type B Houses

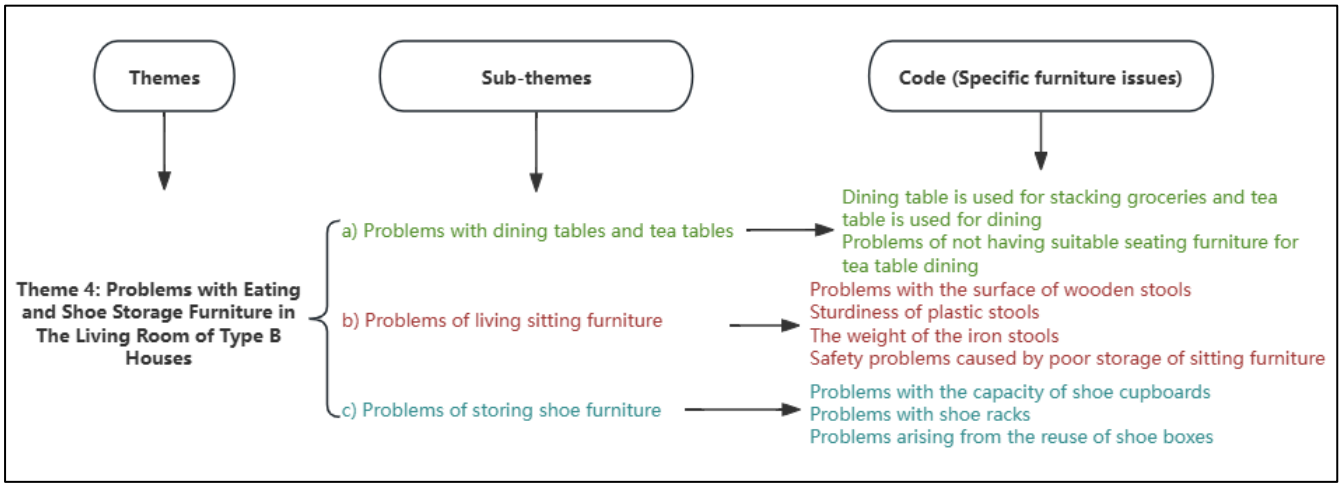


Figure 5.25 Detailed information on Theme 4 of Phase 3

Theme 4 comprises three sub-themes with corresponding codes (Figure 5.25). Table 5.13 summarizes the field notes and interview data, while Figure 5.26 presents the frequency of recorded codes across 30 households and their discussion frequency among the 10 interviewees. Despite differences in data coding, all identified furniture issues occurred with high frequency. These sub-themes and codes are analysed in detail next.

Table 5.13 Sub-themes of 4: Problems with eating and shoe storage furniture in the living room of Type B houses

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
Theme 4: Problems with eating and shoe storage furniture in the living room of Type B houses	10/10	30/30
a) Problems with dining tables and tea tables	10/9	30/30
b) Problems of living sitting furniture	10/10	30/30
c) Problems of storing shoe furniture	10/10	30/29

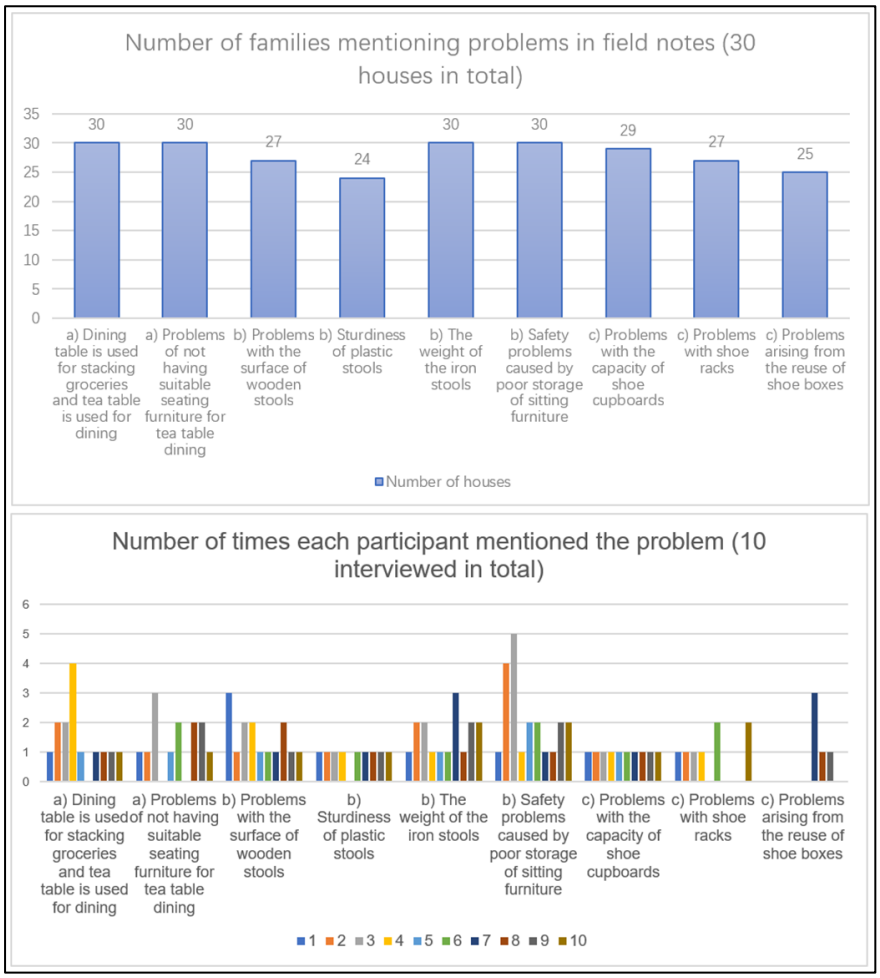


Figure 5.26 Coding of theme 4

a) Problems with dining tables and tea tables

Table 5.14 Statistics on the problems with dining tables and tea tables

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
a) Problems with dining tables and tea tables	10/9	30/30
Dining table is used for stacking groceries and tea table is used for dining	10/9	30/30
Problems of not having suitable seating furniture for tea table dining	10/8	30/30



Figure 5.27 Tea tables in the living room of Q92711 and Q92715

Currently, there are two types of dining furniture in rural households: wooden dining tables with matching chairs (Figure 4.68) and tea tables paired with sofas and small stools (Figure 5.27). Although wooden dining tables are designed for daily meals, interviews revealed that only one family uses the table for main meals. Most other families use the wooden dining table as a space for storing miscellaneous items, opting instead to dine on the tea table in the living room, which also serves as a food preparation area (Table 5.14). Q92715 said: "*We used to eat on the kang table, which is about the same height as the tea table... I bought this wooden table because I saw that other people had one, I thought we should have one too... But in fact, it is much more convenient to eat with a tea table, and it is more relaxing to sit on the sofa than the dining table... I don't think the habit of eating at a tea table will change. In fact, every household in the village is in this situation.*"

The interview notes indicate that villagers prefer dining on the tea table rather than the wooden dining table primarily because the tea table's height resembles that of the traditional kang table, aligning with the villagers' dining habits. Furthermore, purchasing a wooden dining table seems more influenced by a desire to follow trends than actual dining needs.

Additionally, the issue of dining on the tea table without suitable seating was mentioned by eight respondents and all 30 families. S92904 noted: "*We have more people, the position of the sofa is limited, we can only use small stools to match when we cannot sit. The sofa is relatively high, the small stool is low, everyone sits at different levels, and sometimes they block each other.*" One villager suggested that designers could create height-adjustable stools so that both adults and children could find a suitable height, thereby reducing height differences during meals and improving the dining experience.

b) Problems of living sitting furniture

The living room sitting furniture problem in Type B houses is the same as the sitting furniture problem in the hall of Type A houses mentioned in the previous section 5.2.2, which is mainly manifested in the narrow surface area of wooden stools, sturdiness of plastic stools, overly-heavy iron ring stools, and safety hazards brought about by the excessive number of different types of sitting furniture (Table 5.15). To solve these problems, the living room needs to be standardised in terms of the number of items of sitting furniture while simultaneously standardising the types of sitting furniture to avoid safety hazards.

Table 5.15 Statistics on the problems of living sitting furniture

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
b) Problems of living sitting furniture	10/10	30/30
Problems with the surface of wooden stools	10/10	30/27
Sturdiness of plastic stools	10/9	30/24
The weight of the iron stools	10/10	30/30
Safety problems caused by poor storage of sitting furniture	10/9	30/30

c) Problems of furniture for storing shoes

In the surveyed villages, there are three types of furniture used for storing shoes: shoe cabinets, shoe racks, and old shoe boxes (Figure 4.69; Figure 4.70). These storage units are typically placed in the foyers of Type A houses, a practice that did not exist in Type B homes. The halls of Type A houses typically had cement or dirt floors, so there was no need to change shoes upon entering. However, Type B houses are built with tiled floors, prompting residents to pay more attention to cleanliness and neatness in the living room, leading to the practice of changing shoes indoors. The issues related to shoe storage furniture in Type B houses manifest in three aspects (Table 5.16).

Table 5.16 Statistics on the problems of storing shoe furniture

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
c) Problems of storing shoe furniture	10/10	30/29
Problems with the capacity of shoe cupboards	10/10	30/29
Problems with shoe racks	10/7	30/27
Problems arising from the reuse of shoe boxes	10/3	30/25

The capacity of the shoe cabinets was too small to meet the residents' demand for large-capacity shoe storage. All ten interviewed households had shoe cabinets, but they generally reported this issue. For instance, respondent Q92715 noted, "*My family was the first to buy the shoe cabinet... And again, I bought a cheap shoe rack.*" Similarly, respondent Q92711 mentioned, "*I collected the unwanted shoe boxes and stacked them next to the shoe cabinet, equivalent to shoe racks.*" These interviews indicate that the issue of inadequate shoe cabinet capacity has caught the attention of residents, who have adopted various coping strategies.

Seven respondents housed both a shoe rack and a shoe cabinet could be seen placed in the foyer, while the remaining three respondents had stacked old shoe boxes as a substitute for a shoe rack, alongside the shoe cabinet.

Among the seven respondents with shoe racks, six raised concerns about poor durability due to inadequate load-bearing capacity. Respondent S92903 remarked, "*Our plastic shoe rack has only been used for a month, and the bottom layer has begun to distort...My shoe rack was knocked over several times by the kids.*" It is evident that while plastic shoe racks are affordable and easy to disassemble, their load-bearing capacity and stability issues compromise their effectiveness.

The three families that chose to reuse old shoe boxes as storage containers for shoes also identified three issues with this cost-effective and environmentally friendly method. Firstly, the problem of shoe boxes not being moisture-resistant was mentioned by all three families in the interview data. Respondent S92912 stated, "*I put three pairs of leather shoes in a shoebox last spring, and I didn't wear them last winter. This spring opened to see, startled, the appearance of skin is off, there is a bit of mouldy taste, anyway cannot wear, a pity ah.*" Secondly, F92610's respondent also mentioned, "*Although storing shoes in old shoe boxes saves money, it's a hassle to rummage through them every time you find them.*" This suggests that shoe boxes do not make it easy for users to categorise and find shoes, which affects the experience. Lastly, field notes recorded the inconsistent sizes and colours of shoe boxes create a cluttered visual effect in the foyer.

This data suggests that all three types of shoe storage furniture have their drawbacks and that higher capacity, solid, durable and aesthetically pleasing options need to be considered when designing or choosing shoe storage furniture in the future.

5.2.5 Theme 5: Problems of Cooking Furniture in The Kitchen of Type B Houses

Theme 5 consists of one sub-theme with three coding categories. Table 5.17 summarizes the field notes and interview data, while Figure 5.28 presents the frequency of recorded codes across 30 households and their discussion frequency among the 10 interviewees. The consistently high frequency of identified furniture issues highlights the need for further detailed analysis in the following sections.

Table 5.17 Sub-themes of 5: Problems of cooking furniture in the kitchen of Type B houses

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
Theam5: Problems of cooking furniture in the kitchen of Type B houses	10/10	30/30
a) Problems of new cupboards	10/10	30/30
Insufficient storage space	10/10	30/25
Functional partition problem	10/10	30/30
Height problem	10/10	30/30

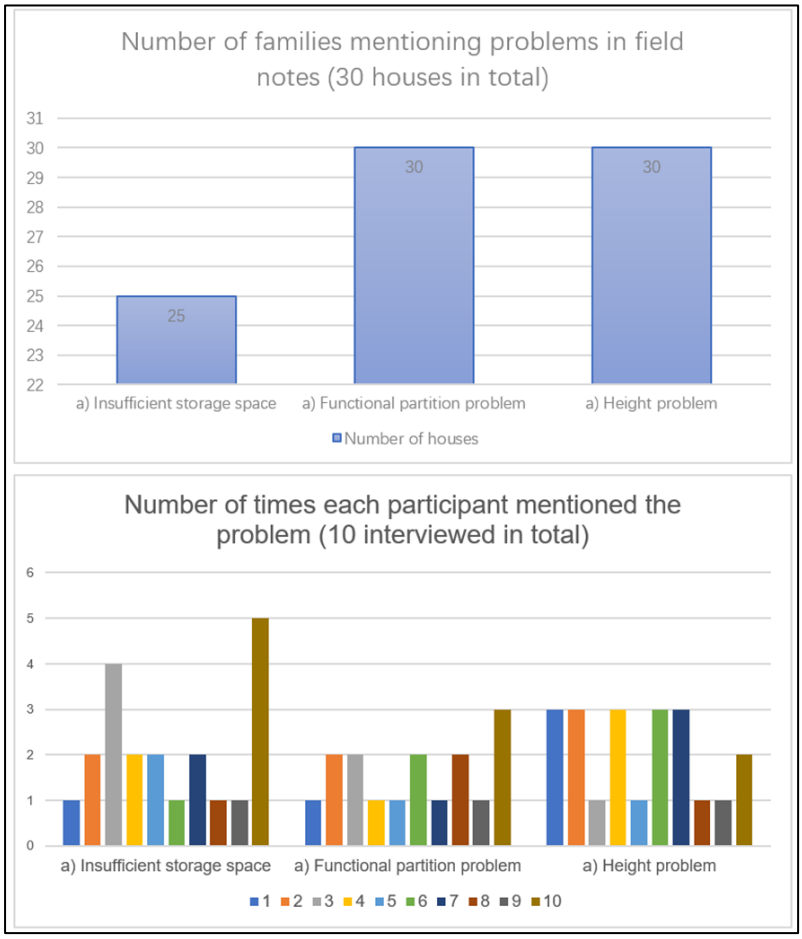


Figure 5.28 Coding of theme 5

a) Problems of new cupboards

In the surveyed villages, new cupboards were found not only in the halls of Type A houses but also in the kitchens of Type B houses. Unlike the two problems with new cupboards in Type A houses (lack of functional zoning and inappropriate height), the new cupboards in Type B houses had not only these two problems but also a lack of storage space (Table 5.17).

Firstly, the lack of functional divisions inside the cupboards and the inappropriate height for the height of the villagers were recorded by 10 respondents and 30 households. Secondly, all ten respondents mentioned that the upper countertop and lower storage spaces were inadequate, a problem also recorded by 25 households in

the field notes. Respondent Q92715 remarked, "*I usually use four pots, this small cupboard cannot be put, sometimes piled on the table, sometimes put into the sundries room, when used to take... This cupboard looks big, but it actually has too little space.*"

So, there is a need to improve the design of the new cupboards in the Type A houses by increasing the storage space, optimising the internal partitioning and adjusting the heights.

5.3 Participant Observation Notes

Table 5.18 Thematic analysis theme statistics: furniture problems in daily life (Participant observation notes)

Name	Total number of households with observation notes / number of households with problems	Total number of days of observation/number of days with problems	Total number of incident scenarios observed/number of times problems occurred
Theme 6: Problems of socializing and entertainment furniture in the inner room of the Type A house and in the living room of the Type B houses	4/4	12/12	16/16
Theme 7: Problems of partitioning domestic spaces in Type A and Type B houses	4/4	12/12	
Theme 8: The need for display furniture in the living room of the Type B houses	2/2	6/4	
Theme 9: Problems in the private space of the male of the Type B houses	2/2	6/6	
Theme 10: Problems of cooking in the kitchen of the Type B houses	2/2	6/6	18/18

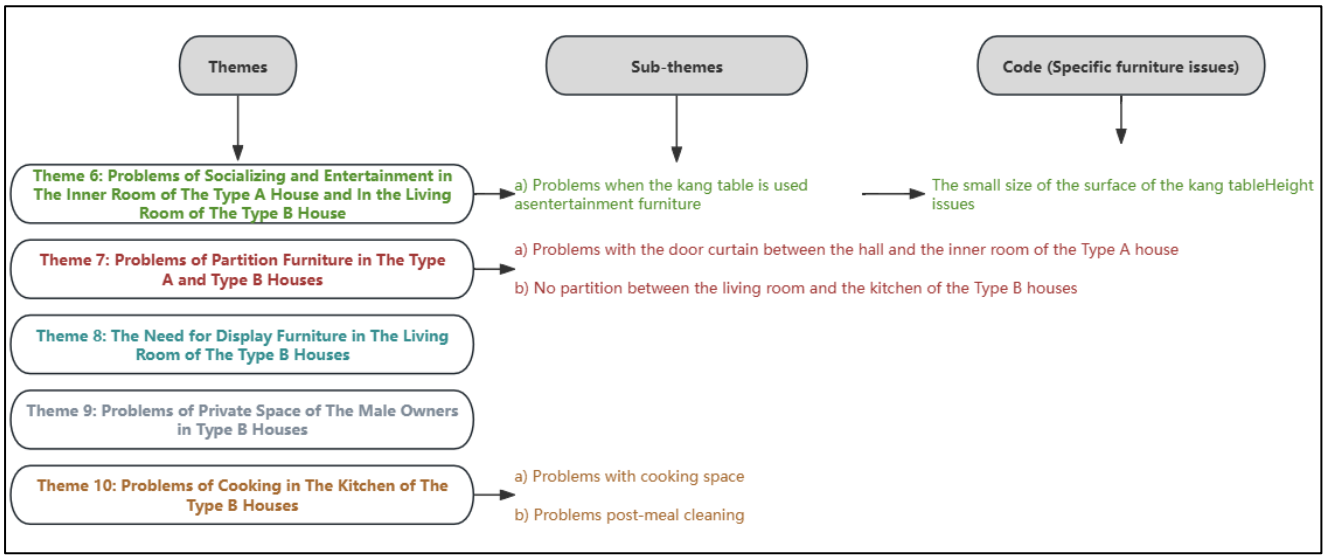


Figure 5.29 Detailed information on Theme 6 to Theme 10 of Phase 3

This section focuses on analysing the data from the participant observation notes and builds on the previous findings to identify five new themes (Table 5.18). The first two themes pertain to common furniture issues found in both Type A and Type B houses, while the latter three themes are supplemental to Type B house furniture issues. Each theme encompasses several sub-themes and codes (Figure 5.29). Figure 5.30 illustrates the types, number, and observation duration of participating households (2 families in Type B houses, 6 days; 2 families in Type A houses, 6 days).

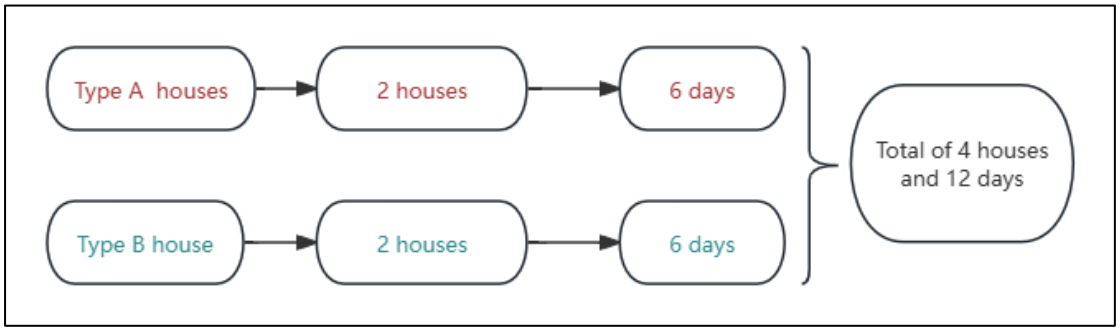


Figure 5.30 Composition of data for Phase 3 (Observation notes)

5.3.1 Theme 6: Problems of Socializing and Entertainment in The Inner Room of The Type A House and In the Living Room of The Type B House

a) Problems when the kang table is used as entertainment furniture

Table 5.19 Sub-themes of Theme 6: Problems of communication and recreation furniture in the inner room of the Type A house and in the living room of the Type B house.

Name	Total number of households with observation notes / number of households with problems	Total number of days of observation/number of days with problems	Total number of incident scenarios observed/number of times problems occurred
Theme 6: Problems of socializing and entertainment furniture in the inner room of the Type A house and in the living room of the Type B houses	4/4	12/12	16/16
a) Problems when the kang table is used as entertainment furniture	4/4	12/12	16/16
The small size of the surface of the kang table	4/4	12/12	16/16
Height issues	4/4	12/12	16/16

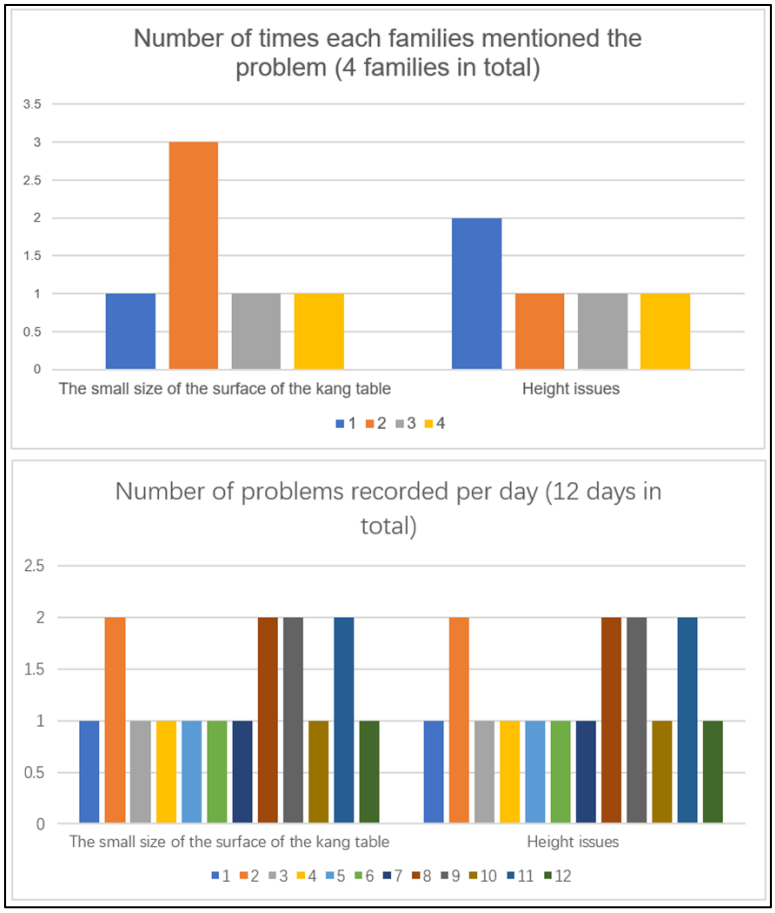


Figure 5.31 Coding of theme 6

In the studied villages, the kang table is not only used for daily meals but is also often repurposed as a mahjong table. During the twelve-day observation of Type B and Type A houses, the researcher recorded 12 days (16 instances) of the kang table being used for playing mahjong or cards. In these instances, two recurring problems were noted, which affected the overall experience of using the kang table (Figure 5.31 Table 5.19).



Figure 5.32 playing mahjong on a kang table of Q92715

The first issue is the small size of the surface of the kang table (90 cm in length, 60 cm in width, and 40 cm in height). When used for mahjong, the table requires four people to sit around it, which leads to a cramped arrangement (Figure 5.32). The observation notes from household D93015 recorded a mahjong session: "*Aunt Wang's elbow bumped into Aunt Chen's arm... Mr. Li laughed and said, 'The table's a bit small; it's a bit cramped.'... Brother Zhang accidentally hit Aunt Wang's arm.*" This reflects how the small size of the surface of the kang table disrupts the mahjong experience.

The second issue is the height of the table is relatively low, which forces players to sit cross-legged and bend over when playing games. For example, the notes (Q92715) stated: "*Aunt Wang said, 'Wait, I'll get up and walk around, my back hurts.'... Aunt Li said, 'My legs are numb, they're numb.*" This clearly illustrates that sitting cross-legged for long periods to play mahjong on the kang table can lead to discomfort in the legs and back.

The kang table presents two problems when used for entertainment: its small size and inadequate height. These issues cause discomfort for users, impacting their physical well-being. Therefore, there is a need for more thoughtful design and improvements in the kang table, or choose other alternative furniture to meet the needs of villagers.

5.3.2 Theme 7: Problems of Partition Furniture in the Type A and Type B Houses

Table 5.20 Sub-themes of Theme 7: Problems of partition furniture in the Type A and Type B houses

Name	Total number of households with observation notes / number of households with problems	Total number of days of observation/number of days with problems	Total number of incident scenarios observed/number of times problems occurred
Theme 7: Problems of partition furniture in the Type A and Type B houses	4/4	12/12	
a) Problems with the door curtain between the hall and the inner room of the Type A house	2/2	6/6	
b) No partition between the living room and the kitchen of the Type B houses	2/2	6/6	

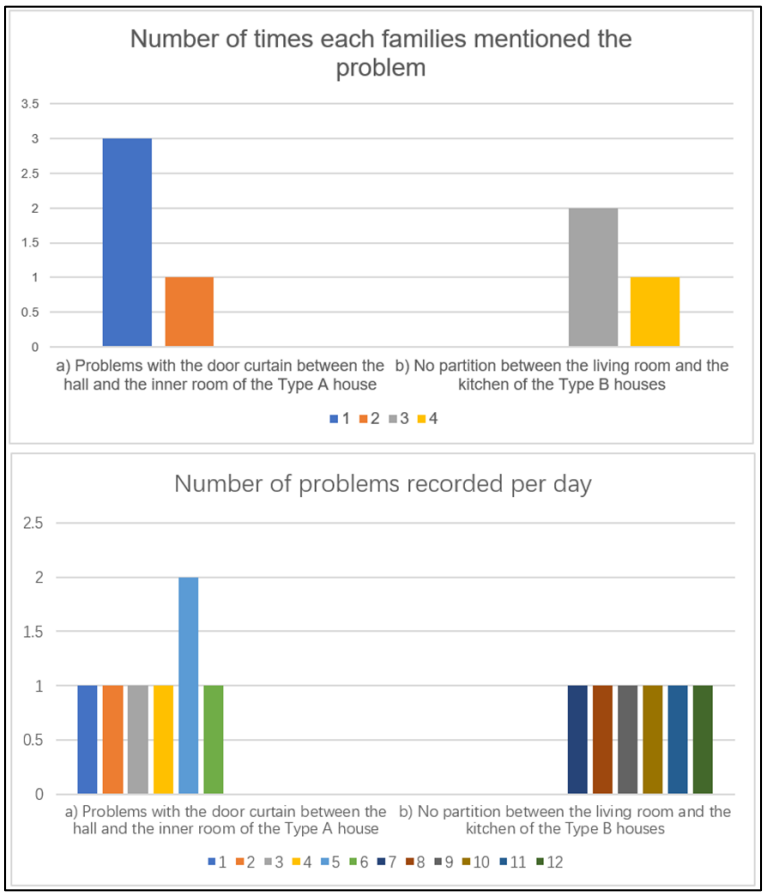


Figure 5.33 Coding of theme 7

In the studied villages, the spaces within Type A houses are connected by curtain doors rather than conventional doors. The curtain doors serve multiple functions, including blocking light, restricting airflow, providing wind proofing and insulation, and protecting privacy (Figure 4.52). Villagers change the curtain depending on the season and temperature (thin fabric or bead curtains are used in summer, while cotton fabric is chosen in winter). Currently, when used as partitions within indoor spaces, these curtain doors fail to protect the privacy of family members. During the observation of two Type A houses, the researcher recorded instances of privacy violations every day (Table 5.20; Figure 5.33). For example, in the F92607 household: "*At 12:03 PM, the female householder was resting on the kang in the east room while the researcher was sitting on a stool in the room organizing data. Suddenly, the male householder returned home with three friends, speaking loudly,*

and directly lifted the curtain door. When they saw the situation inside, the female householder was startled, and the male householder's friends appeared very embarrassed. The group then moved to the west room. As the curtain door was lifted, it quickly closed again. The little boy inside the room said, 'Dad, wait a minute, I'm getting dressed, please wait before coming in.'"

In addition, the researcher observed that there is no partition between the living room and kitchen in Type B houses. This results in the kitchen being directly connected to the living room, with cooking fumes from the kitchen entering the living room and even spreading to the bedroom, affecting the health of family members.

In summary, whether in Type A or Type B houses, the partitioning issues of household spaces urgently need to be addressed to improve privacy protection and the health of the living environment.

5.3.3 Theme 8: The Need for Display Furniture in The Living Room of The Type B Houses

In the observation notes, the researcher found a significant latent demand for display furniture among male owners in the two Type B households (Table 5.18). This problem was first noted in the Q92711 household, where the male owner and a male guest repeatedly expressed a desire for a display cabinet in the living room to showcase family photos, children's awards, and various crafts. Subsequently, the male owner of Q92715 expressed, "*I plan to buy a bigger TV cabinet to showcase my gourds, along with decorative items, books, vases, and children's awards.*" This indicates that male owners have a strong demand for additional display furniture in the living room. This demand reflects villagers' pursuit of quality-of-life following

improvements in their economic conditions, as well as their emphasis on family culture and aesthetics.

5.3.4 Theme 9: Problems of Private Space of The Male Owners in Type B Houses

During the research process, it was found that most male villagers are engaged in work outside the home during the day, with their time at home typically concentrated in the evenings, posing certain challenges to the study. However, through six days of observation in two Type B households, it became evident that the demand for private space among male owners was particularly pronounced (Table 5.18).

In the observation of the Q92715 household, the researcher noted that tools such as pliers, hammers, unfinished stools, and various forms of gourds were placed on the living room sofa and tea table. The female owner said that this area served as the main site for the male owner's handicraft activities after work. she would carefully avoid these tools when cleaning the house, but because these tools are messier and more difficult to clean, she repeatedly complained about the male owner's untidy habits. She also mentioned that she had sorted out the items when the male owner was not at home, but there were many arguments over it.

In contrast to the Q92715 household, the Q92711 household provided a more defined private space for the male owner. In this household, the male owner had constructed a small shed in the front yard specifically for storing repair tools and fishing equipment. His alone time was concentrated between 7:00 PM and 8:00 PM. The field notes recorded by the researcher state: "*At 7:00 PM, after a simple dinner, the male owner walked directly to the shed to organize the tools and equipment inside. The shed was tidy and well-organized, with various tools and equipment classified and arranged. At 7:15 PM, he began repairing a fishing rod, meticulously checking each component.*

During this process, he appeared very focused, seemingly immersed in his own world without saying a word to me. At 7:45 PM, he organized his tools and made a list of items to purchase at a nearby workbench. By 8:00 PM, he completed the day's organization and repairs and closed the shed door." In discussions with the researcher, the male owner emphasized the importance of this solitary space, viewing it as a means to escape daily trivialities and stress, as well as a necessary place for contemplation and planning future tasks.

Through the situations observed in these two households, further observations during subsequent field investigations revealed that in other households, the tools or preferred items used by male owners lacked a designated storage location, often appearing in the living room, utility rooms, or even corners of the yard. This problem stemmed mainly from the absence of a dedicated private space for male owners to store these items within the family living environment, leading to frequent dissatisfaction among female owners regarding the haphazard placement of tools. Therefore, it is particularly important to reserve a private space for the male owners.

5.3.5 Theme 10: Problems of Cooking in The Kitchen of The Type B Houses

Table 5.21 Statistics on the problems of cooking in the kitchen of the Type B houses

Name	Total number of households with observation notes / number of households with problems	Total number of days of observation/number of days with problems	Total number of incident scenarios observed/number of times problems occurred
Theme 10: Problems of cooking in the kitchen of the Type B houses	2/2	6/6	18/18
a) Problems with cooking space	2/2	6/6	18/18
b) Problems post-meal cleaning	2/2	6/6	18/18

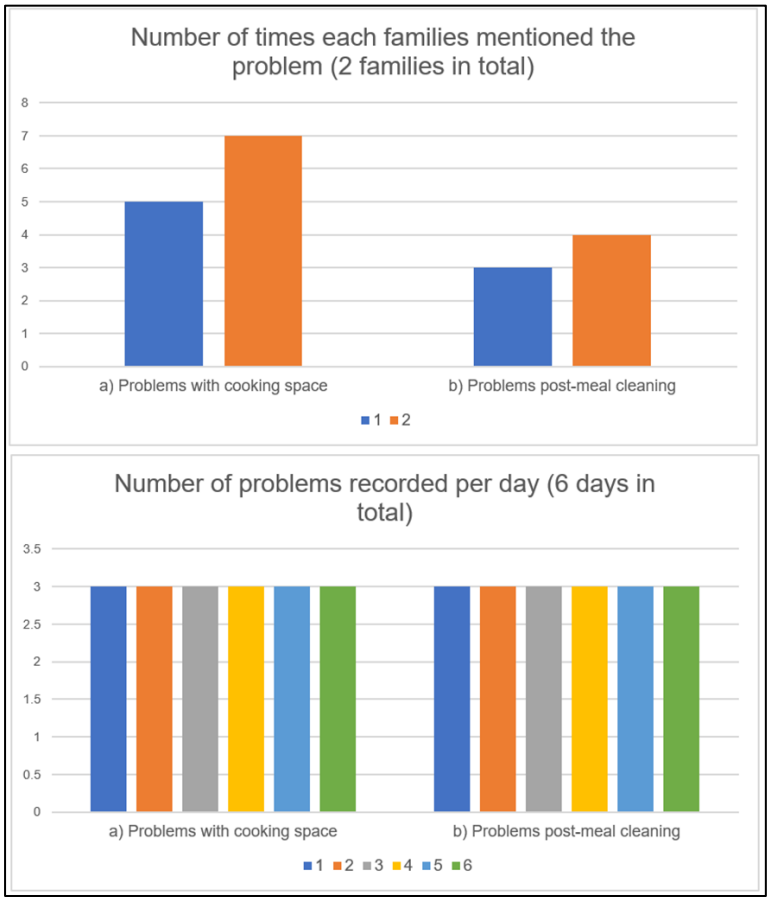


Figure 5.34 Coding of theme 10

During a six-day participatory observation of kitchen activities among family members in Type B houses, the researcher recorded 6 days (Three meals per day, for a total of 18 instances over 6 days) of cooking processes and identified two significant problems: the limited space in the cooking area and the difficulties in post-meal cleaning (Table 5.21; Figure 5.34).

The problem of restricted space in the cooking area was evident in each cooking instance. For example, during the observation of the Q92711 household, the research records detail the female owner's actions while preparing dinner: "*The female owner began preparing dinner, placing the necessary ingredients and seasonings on the kitchen cupboard, floor, and stools...She could not operate both cooking vessels simultaneously in the kitchen. She decided to stir-fry in the kitchen while moving the*

steamer to a corner of the living room, plugging it in to begin steaming the dumplings (the living room became a temporary cooking area). From 5:11 PM to 5:30 PM, she toggled between the kitchen for stir-frying and the living room to check on the steamer, adeptly navigating between the two areas six times. She told the researcher that such scenarios occurred almost daily due to the kitchen being too small to accommodate multiple cooking tools at once." This scene illustrates the limitations of kitchen space design, forcing some cooking activities to occur in the living room. Thus, future kitchen space design needs to prioritize reasonable layout and optimization of tool storage to enhance space utilization.

Regarding post-meal cleaning, it was discovered that the inadequate allocation of space for the kitchen sink severely impacted cleaning efficiency. This problem was observed in the 18 cooking instances, primarily occurring after lunch and dinner each day. In the observation diary for the Q92715 household, it was noted: "*After finishing dinner at home, the female owner first attempted to wash one large frying pan that had not been properly cleaned after lunch. This large pan could not fit entirely in the sink, so she had to place part of it in the sink while the other part remained outside. She first cleaned the interior of the pan in the sink, then flipped it over to scrub the bottom, splashing water everywhere, leaving the floor tiles under the sink soaked. She temporarily placed the cleaned frying pan on the floor and sequentially placed eight bowls, five plates, six pairs of chopsticks, and four spoons into the sink for cleaning... She placed the cleaned bowls and plates on the edge of the sink, but the dirty water she was rinsing often splashed onto the clean dishes.*" This indicates that the small sink space forced the female owner to adopt inconvenient methods, resulting in splashing water that made the floor slippery. More seriously, during cleaning, due to insufficient sink space, the already cleaned dishes had to be temporarily placed on the sink's edge, making them susceptible to contamination by dirty water, significantly lowering cleaning hygiene standards.

In summary, improvements need to be made in the future design concerning the layout of the kitchen cooking space and the post-meal cleaning area.

5.4 Summary of Problems and Demands Relating to Currently Used Furniture in Daily Life

Sections 5.2 and 5.3 provided a comprehensive analysis of the challenges associated with the currently used furniture in the context of daily life in rural Jidong. This section organizes the findings in Table 5.22, enabling a systematic examination of furniture issues and needs across the different spaces in Type A and Type B houses.

Table 5.22 Problems and demands relating to currently used furniture in daily life

Home space	Currently used furniture	Specific problems/use scenarios	Demand transformation
Inner room (Type A houses)	**kang and peripheral products**	Overheating of the kang may cause skin burns, which are especially dangerous for children.	Effectively control the temperature of the kang surface; provide long-term stable heat-insulating material for the kang surface
		The mismatch between the height of the kang and the sofa	Height-matched sofa furniture design; reasonable furniture layout adjustment, so that both sides of the conversation can maintain a comfortable distance and eye level
		Adults under 1.55 metres in height, adolescents, children and persons over 65 years of age have difficulty getting on the kang.	Provision of kang-side aids: A design is needed that can help a person get on and off the kang easily, ensuring safety and convenience.
		Cluttered shoes on the side of the kang are disruptive to walking and increase the risk of tripping and falling.	Reasonable storage space: Shoe racks or storage areas are needed to avoid shoe clutter. Safety and security: the design needs to be trip-proof, with special consideration for

			children and the elderly.
		Problems of mosquito nets on the bed Traditional mosquito nets: the mesh is too big to effectively prevent mosquitoes. Commercially available mosquito nets: the size is not suitable for the bed, the price is expensive. Homemade mosquito nets: wire bracket is a potential safety hazard, especially for children.	Functional requirements: need smaller mesh, can effectively prevent mosquitoes. Suitable size: able to cover the whole kang. Structure, material and safety: avoid using dangerous materials such as wire.
	The combination TV stand	Poor access to clothing in the wardrobe area. Lack of layering design: clothes are stacked together, making it inconvenient to access them. Excessive depth: bending or squatting is required to fetch the clothes on the bottom layer, which is especially unfriendly to the elderly. Insufficient lighting: poor lighting inside the cabinet makes it difficult to find clothes.	Increased layering: allows clothes to be sorted and arranged for easy access. Optimise depth: reduce the frequency of bending or squatting to improve comfort. Improved visibility: enhances interior lighting.
		The functional zoning in the centre is not clear enough, resulting in cluttered placement of items.	Functional partition: easy to categorise and store items. Storage design: suitable for different types of items.
	Clotheslines and fans	The proximity of the clothesline to the electric fan is a safety hazard.	Avoiding contact between the fan and the items to be dried provides a flexible solution for drying clothes without disrupting daily life.
The hall (Type A houses)	**Chopping board**	Stovetop casework drop boards are unstable and tend to slide or fall, which can cause smashes or cuts.	Improved stability, safety and ease of handling of boards
	Water tank	Water storage safety issues: old tanks are at risk of breakage due to cracks and icing. Difficulty in cleaning and moving: the heavy weight of the tank when full of water makes it very difficult to clean and move. Plastic buckets are insufficiently load-	Improvement of safety: Improvement of the material and structure of the tank is needed to enhance the low temperature resistance and structural strength. It needs to be easy to clean and move, and also to improve load-bearing capacity

		bearing and easily damaged.	
Bedroom (Type B houses)	**Wooden beds**	There is a lack of mattresses with the right firmness and size. The surface of the mattress is not flat.	Suitable firmness: need to design a mattress with a firmness equivalent to 4-5 layers of old quilts. Suitable size: 2 metres x 2 metres Suitable material: flat and comfortable
	Bedroom seating	Safety hazards: bedroom seating is not enough to sit on, villagers use different kinds of sitting tools in the bedroom; in order to reduce the cost of purchasing, villagers make their own improved seating tools Diversity of needs: they want the seats to have a storage function.	Harmonise sitting specifications: eliminate the safety hazards of different types of seating. Unify bedroom seating specifications: control material and cost price so that villagers can afford to buy. Functional design of bedroom seats: storage function.
	Writing desk	Families with children: The high height of the writing desk and the lack of a matching chair discourage children from using it, leading to idleness. Families without children: the writing desk is stacked with sundries and under-utilised.	Child-friendly design: complementary amenities to improve chairs. Functional needs: multi-functional renovation programme to improve furniture utilisation.
Living room (Type B houses)	**Problems with the male master's private space**	Lack of private space: the tools and belongings of male hosts are placed randomly, affecting the tidiness of the household and easily triggering family conflicts and clashes. Irregular placement of tools: No special storage space for tools, which is inconvenient to manage and affects aesthetics and safety.	Private space needs: male masters need a fixed private space. Tool storage needs: need an orderly tool storage space or cabinet, easy to manage and keep tidy.
	Shoe furniture (shoe cabinets, shoe racks, shoe boxes)	Shoe cabinets have insufficient capacity to meet family shoe storage needs. Plastic shoe racks have poor load-bearing, easy to deform, and are a potential safety hazard. Old shoeboxes are not moisture-proof, difficult to classify and messy in appearance.	Storage demand: shoe loading furniture needs large capacity Load bearing and stability: durability should be high Practicality: moisture-proof, convenient storage and classification.
	Display	The living room lacks display furniture: it	Demand for display furniture: need display

	furniture	is used to display the collection of the man of the house. The display furniture needs to be aesthetically pleasing and practical.	cabinets, display cabinets should not only have the function of display, but also with the overall design of the living room to harmonise, beautify the environment.
	Eating Furniture (dining tables and tea tables)	Wooden dining table: Although the wooden dining table is designed to be used for formal meals, villagers mostly use it for stacking sundries, and the actual meals are mainly held on the tea table in the living room. Adaptability of the height of the coffee table: The height of the tea table is similar to that of the traditional kang table, which is in line with the villagers' dining habits, but there is no suitable sitting furniture.	The dining habits of villagers should be preserved and adapted to the use of tea tables for meals. Optimise the design of seating: design seating or sofas that fit the height of the tea table (kang table) to meet the dining needs of a large number of family members.
Common furniture (Type A and Type B houses)	**Kang tables as dining tables and entertainment furniture**	Difficulty of movement and use: kang tables are heavy and difficult to move. Lack of matching sitting furniture makes it uncomfortable to use. The size and height of the table are not suitable for use as entertainment furniture.	Improve mobility: Design lighter or with lockable wheels for ease of movement. Provide matching seating: Design specialised seating to match the height of the table to ensure comfort. Regarding the length, width and height of the kang table, as it is a continuation of traditional furniture, it is best not to adjust the size and height of the kang table and choose other products to use as entertainment furniture.
	New cupboards (halls and kitchens)	No functional zoning: pots and pans, cutlery, spice bottles, etc. are mixed, making them more difficult to access and risking breakage. Uncomfortable height: the height of the cupboards is not ergonomic, causing villagers to bend or squat frequently, resulting in physical discomfort. Insufficient storage space: the upper countertop and lower storage space cannot meet villagers' needs, leading to accumulation of items and kitchen clutter.	Increase storage space Optimise functional zoning Adjust cupboard height
	New cupboards and sinks	Unreasonable cooking space leads to inefficient cooking. Problems with post-meal cleaning using	Cooking space rationality needs: Ensure flow and co-ordination between cooking areas (e.g. hob, chopping area, sink, etc.) in

	(Problems with cooking space in type B kitchens)	the sink	newer cupboards to improve cooking efficiency. Post-meal cleaning needs: Setting up an effective post-meal cleaning programme, including sensible sink zoning design.
	Sitting furniture (stools) (Every space in the house) **(wooden stools, plastic stools and iron ring stools)**	Wooden stools: narrow surface, uncomfortable to sit on. Plastic stools: easy to break, not strong enough. Iron ring stools: bulky and uncomfortable to sit on. Safety Hazard: the various types of stools scattered in the hall are a safety threat to the elderly and children. Space Occupancy: Many stools piled up in the house makes the house look cluttered and disordered, and the space utilisation rate is low.	Improvement of comfort, durability and safety (stability and anti-slip) of the seating, redesigning the seating to be more ergonomic. Stacking design reduces space occupied in the hall
	Partition	Privacy problem: Type A houses have curtains instead of doors, resulting in poor privacy and frequent offence. Health problem: Type B houses have no partition between the kitchen and living room, spreading fumes into the living room and bedrooms, affecting health.	Privacy protection needs: better partition design is needed to improve the privacy of the house. Health protection needs: partition is needed to solve the problem of spreading grease and smoke from the kitchen and to improve indoor air quality.

Type A houses:

In the inner room, overheating the kang surface poses a significant risk of skin burns. Addressing this requires effective temperature regulation. The height disparity between the kang and the sofa disrupts visual alignment. It causes physical discomfort, necessitating the design of height-compatible sofas and the optimization of furniture arrangements to facilitate comfortable social interactions. The difficulty of getting on the kang calls for developing safe and practical assistive tools to accommodate people under 1.55 metres in height. The clutter of shoes near the kang increases tripping hazards, highlighting the need for secure and convenient shoe storage solutions. In addition, for mosquito nets that are ineffective against

mosquitoes, in appropriate sizes and safety hazards, there is a need to design safe, kang-sized and affordable anti-mosquito mosquito net solutions.

Regarding the combination TV stand, difficulties in accessing items from wardrobe areas and poorly defined functional partitions in the middle area. It is necessary to design a wardrobe with reasonable layering and moderate depth, and to optimise the functional zoning to improve the efficiency of sorting and storing items and visual cleanliness. Moreover, safety concerns arise from the proximity of clotheslines to electric fans, necessitating designs that ensure safe distances or provide flexible and efficient drying solutions.

In the halls, the design of stable and easy-to-use chopping boards is required to reduce the risk of injury from sliding and falling. In addition, to address the safety hazards and difficulties in cleaning and moving water tanks, the materials and structure of water tanks need to be improved to enhance safety and to design lightweight and easy-to-clean tanks.

Type B houses:

The main problem in the bedroom is the lack of mattress firmness in the wooden beds, which needs to be designed with moderate firmness (equivalent to 4-5 layers of old quilts) to ensure a size of 2 metres by 2 metres. Meanwhile, the safety hazards and functional needs of bedroom seating require the development of standardised wooden seating and the design of seating with storage functions to reduce costs. For families with children, child-friendly writing desks and matching chairs need to be designed; for families without children, multifunctional retrofitting solutions should be provided to increase the utilisation of unused writing desks.

In the living room, the male owner needs a dedicated private space for storing tools and belongings to improve household tidiness and reduce family conflicts. For shoe furniture, shoe cabinets, shoe racks and shoe boxes have their drawbacks, therefore, in terms of design strategy, shoe furniture needs to be redesigned to meet the storage needs, load-bearing capacity and stability of the villagers. In addition, the design of the display cabinet needs to display the male collectibles and family honours, while balancing aesthetics and practicality. For the unused dining table and the tea table for dining, the analysis showed that the wooden dining table did not meet the living habits of the villagers. In contrast, the height of the tea table was like that of a traditional kang table, and matching sitting furniture needed to be provided.

Furniture common to both Type A and Type B houses:

kang tables face issues related to poor mobility and a lack of height-compatible seating when used as dining or entertainment furniture. This necessitates the design of lightweight, portable kang tables, accompanied by seating solutions that align with ergonomic standards. New cupboards in the halls or kitchens present challenges in cleaning, storage capacity, and height adaptability, necessitating improved functional zoning, increased storage space, and height adjustments to align with ergonomic principles. Issues with sitting stools in Type A halls and Type B houses highlight the need to minimize the variety and quantity of sitting to reduce tripping risks. Finally, partition furniture in both house types lacks the functionality to ensure privacy and mitigate the spread of kitchen fumes, emphasizing the need for effective partition designs that enhance privacy protection and improve indoor air quality.

5.5 Summary of Phase Three

In this chapter, this analysis was carried out through semi-structured interviews, field notes, and participant observation notes, integrating both the perspectives of

respondents and the researcher. Utilizing NVivo software for systematic data processing and coding, the study identified 10 themes and 21 sub-themes.

Based on these data, the researcher has successfully analysed the current problems and needs related to furniture in daily life in rural Jidong. Figure 5.35 shows the current furniture with serious problems in its use summarised in this chapter: the furniture of type A houses, the furniture of type B houses, and the furniture used in both types of houses. The corresponding design principles for this problem furniture are given in Chapter 8.

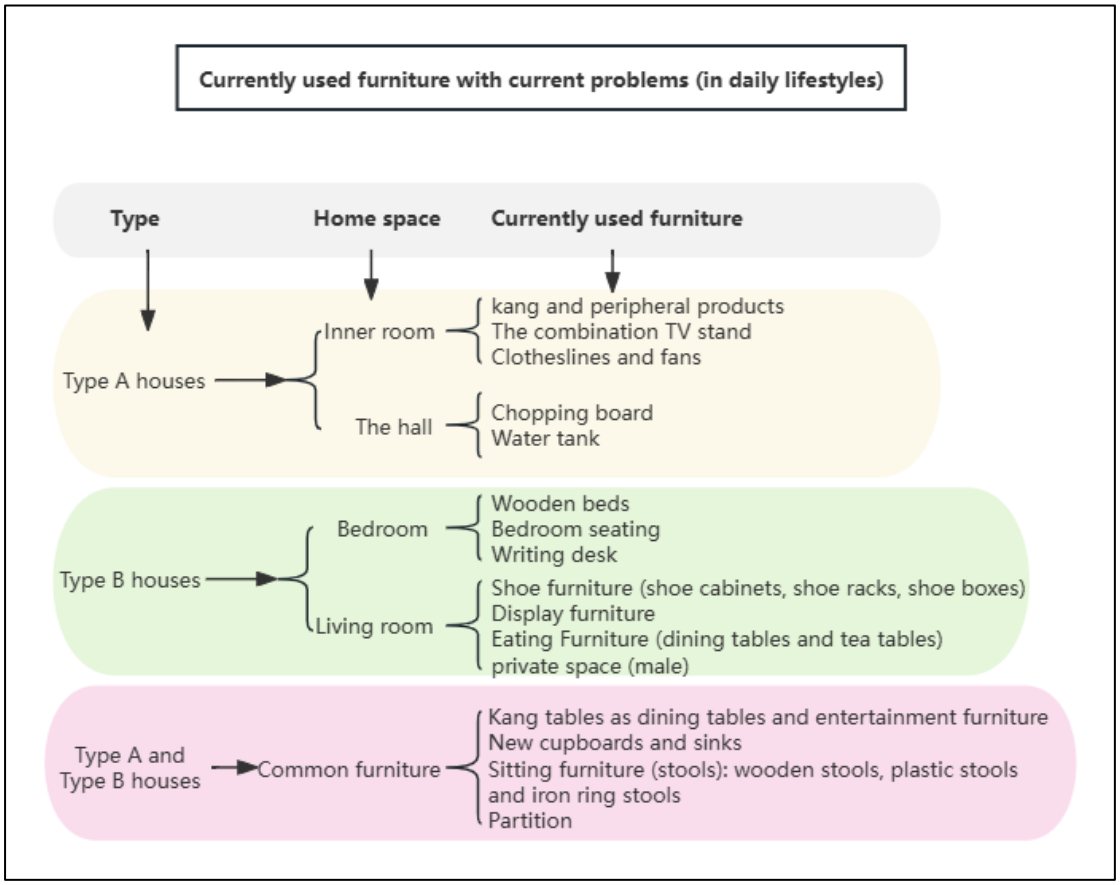


Figure 5.35 The current furniture with serious problems in daily lifestyles

6 Findings and Analysis from Phase Four

6.1 Introduction

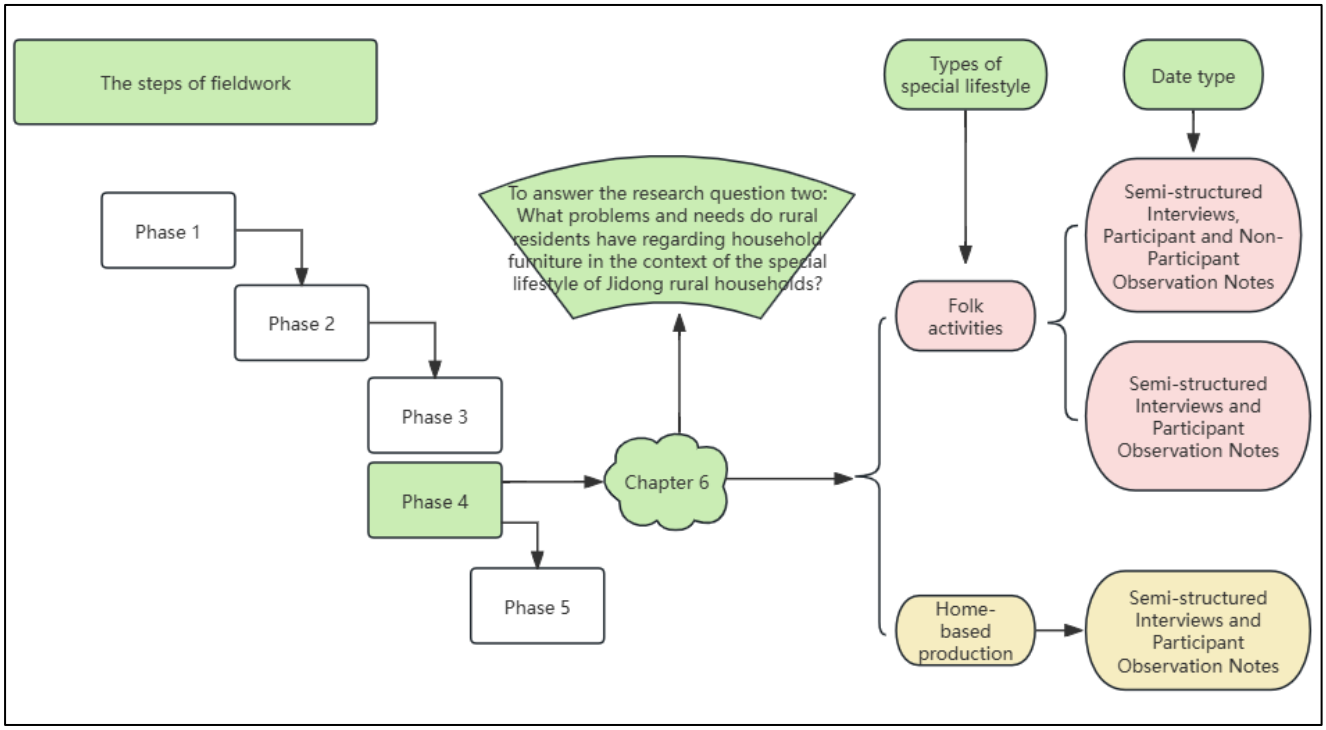


Figure 6.1 Introduction to chapter 6

To answer the research question of 'the problems and needs of the furniture used nowadays in the special lifestyle of Jidong villages', the researcher collected two types of data (Figure 6.1). Firstly, interview data, participant observation notes and non-participant observation notes were collected on the problems and needs of furniture when Jidong villagers organise folk festivals (such as weddings and New Year) at home. Secondly, interview data and participant observation notes were collected on the problems and needs that arise for furniture when Jidong villagers are home-based production (as exemplified by the village shop, mahjong parlour and processing factory). This chapter goes through a systematic thematic analysis of these data.

During the process of thematic analysis, the researcher also conducted two rounds of coding. First, in the manual coding phase, the researcher read the printed transcripts verbatim, identifying a total of 134 initial themes. Next, the researcher imported these manually coded themes into the NVivo software for further analysis, and after refinement and recoding, 19 major themes were finally identified (Figure 6.2). Of these, the first eight themes were based on data analyses of furniture used to host folklore events at home in special lifestyles, while the last eleven themes were specific to data analyses of furniture used for home-based production at home in special lifestyles. These analyses provide an important theoretical basis for the design principles in the subsequent chapters.

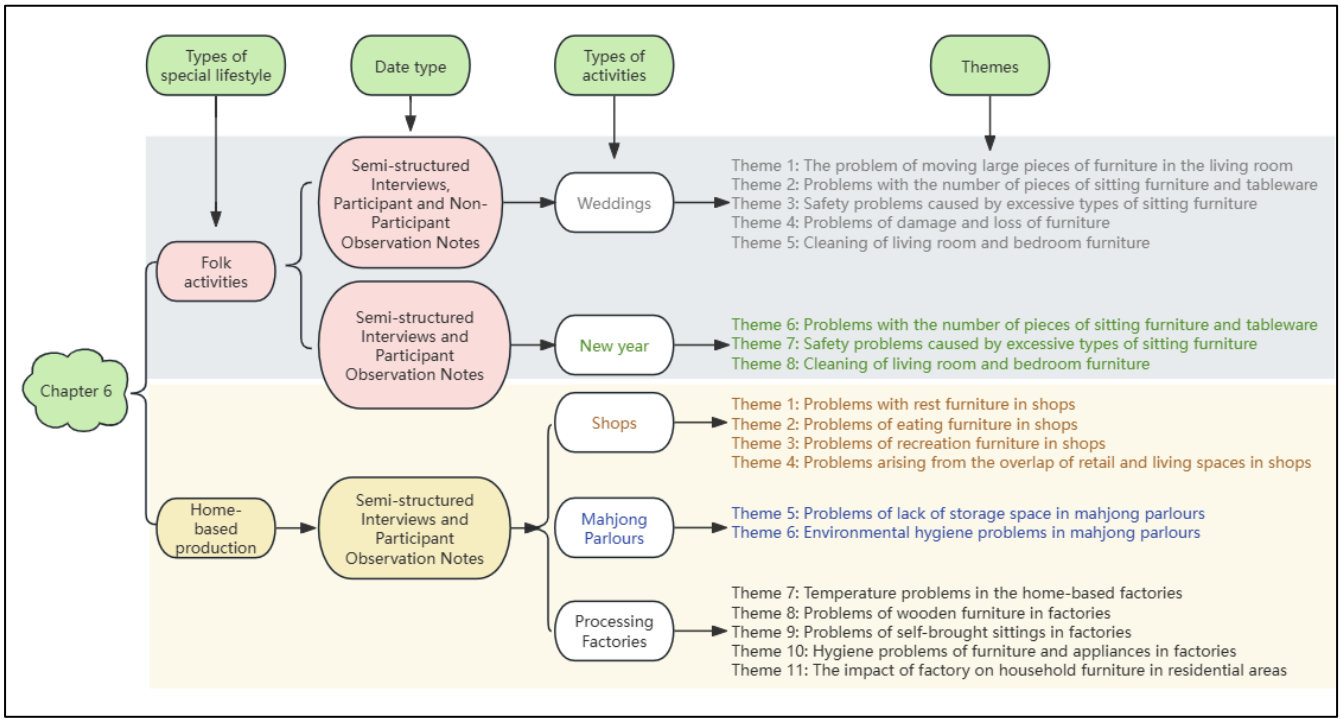


Figure 6.2 Themes of phase 4

6.2 Semi-structured Interviews, Participant and Non-Participant Observation Notes

Table 6.1 Thematic analysis theme statistics: furniture problems during weddings

Name	Total number of semi-structured interviews / number of people mentioning problems	Number of times questions were mentioned	Total number of households at weddings/ number of households with problems	Total days of participant observation/ number of days with problems	Number of times questions appeared in participant observation notes	Total days of non-participant observation/ number of days with problems	Number of times issues arose in non-participant observation notes
Theme 1: The problem of moving large pieces of furniture in the living room	5/5	27	4/4	9/9	9		
Theme 2: Problems with the number of pieces of sitting furniture and tableware	5/5	22	4/4	9/9	35	3/3	12
Theme 3: Safety problems caused by excessive types of sitting furniture	5/5	6	4/4	9/9	13	3/3	5
Theme 4: Problems of damage and loss of furniture	5/5	10	4/4	9/9	52	3/3	23
Theme 5: Cleaning of living room and bedroom furniture	5/5	7	4/4	9/9	22	3/3	17

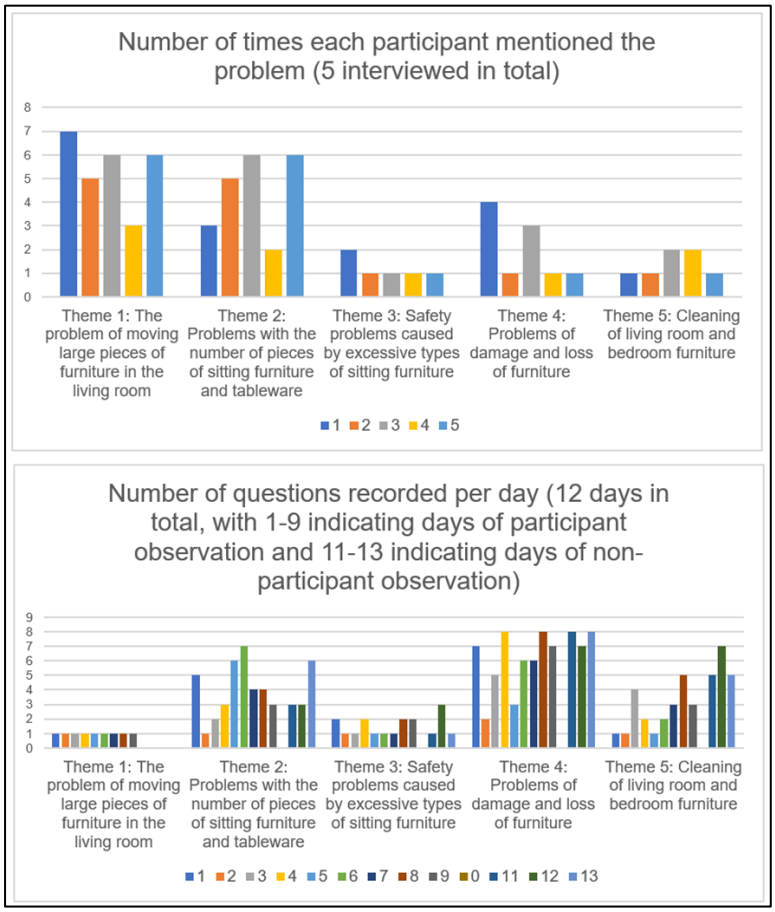


Figure 6.3 Coding of themes one to five (weddings)

All observed weddings took place in Type B houses, with feedback collected from five interviewees through semi-structured interviews. The study spanned 12 days across four families, including 9 days of participant observation and 3 days of non-participant observation (Table 6.1). Figure 6.3 illustrates the frequency of each issue mentioned by respondents, all of which were high. It also details the furniture-related problems encountered under both observation modes and their daily occurrence rates.

6.2.1 Theme 1: The Problem of Moving Large Pieces of Furniture in The Living Room

In rural Jidong, wedding ceremonies last for three days, during which limited rural household space must accommodate approximately 40 guests. As a result, all living

room furniture must be moved to storage rooms on the eve of the wedding and then returned to its original place after the event (Figure 6.4). While moving small furniture pieces is relatively easy, relocating and rearranging large items such as sofas, tea tables, TV cabinets, and refrigerators pose significant challenges.



Figure 6.4 Living room furniture in the grocery room and as a living room for feasting guests during the wedding in S92906

This problem was mentioned by all interviewees and was repeatedly noted in the researcher's 9-day observation notes during the weddings (Table 6.1). For example, during the wedding at the S92906 household, the day before the wedding was described as follows: "*Three neighbours helped move all the living room furniture to the storage room. The sofa was moved by three people to the storage room...The TV cabinet and refrigerator were moved by two people... Li carried the tea table into the storage room. The entire process took three hours.*" The day after the wedding, the Aunt Wang, the son, the daughter-in-law, and the researcher spent four hours moving the items back to the living room. Villagers also shared similar experiences, such as during Uncle Wang's funeral when the living room furniture was moved to the storage room to create space for a mourning hall.

In summary, moving and rearranging large living room furniture is a common and serious challenge for rural households with limited space during weddings (or funerals), necessitating design interventions.

6.2.2 Theme 2: Problems with The Number of Pieces of Sitting Furniture and Tableware



Figure 6.5 Kitchen and living room scene for entertaining guests during the wedding in F92602

In rural Jidong, weddings usually last three days, with 40 to 200 people eating each meal at the home where the wedding is being held. Forty guests are usually arranged to eat in the living room and bedrooms first, and the rest eat in the yard or on the street. To accommodate such a large crowd, wedding families need numerous tables, chairs, benches, and table wares[13] from their storage rooms for guest use (Figure 6.5).

However, the number of sittings and table wares was insufficient. This problem was mentioned by all five interviewees and was observed in all four households (Table 6.1). For instance, On the day of F92602's wedding, participant observation notes

[13] Table wares refer to the utensils and appliances used to ingest food, including knives, forks, bowls, plates, and pots.

recorded: "*Many guests couldn't find seats (sits)... Uncle Chen was busy entertaining guests while asking the younger members of the family to borrow more benches from neighbours… Seven young men stood by the tables, eating with one hand holding a bowl and the other holding chopsticks... Aunt Chen noticed that all the household tableware had been used up, but there were still dishes to be served... Uncle Chen said, 'I'll go borrow some from the eldest aunt's house.' At 11:41, Uncle Chen returned with plates from a neighbour.*"

This indicates that there are not enough sitting furniture and table wares for weddings because there are too many guests. To solve these problems, villagers usually borrow them from their neighbours. However, this is not a permanent solution; there are many other traditional festivals similar to weddings that are held at home throughout the year, and the same need to accommodate a large number of guests makes it necessary to have a sufficient number of sitting furniture and table wares prepared in advance for these festivals.

6.2.3 Theme 3: Safety Problems Caused by Excessive Types of Sitting Furniture

The issue of safety hazards caused by different types of sitting furniture that can be scattered in the room arose not only in daily life, but also in special life during the organisation of weddings. It was mentioned in the records of five interviewees and in four households (Table 6.1). On the wedding day at Q92707, non-participant observation notes recorded: "*Six children were running around the living room, and a little girl tripped over a bench, knocking it over. The little girl fell onto the boy in front of her, and they both tumbled to the ground, with the boy hitting his head on the corner of the round table.*" D93013 respondent mentioned a temporary solution: he used a makeshift carpet to divide the living room into a rest area and a dining area, but it was ineffective as guests neither noticed nor followed the division. The movable carpet only increased the cleaning burden. This clearly demonstrates that, as with the

sitting furniture issues studied in daily lifestyles, the large number and variety of types of sitting furniture during weddings present safety hazards and require design intervention.

6.2.4 Theme 4: Problems of Damage and Loss of Furniture

The problem of damage and loss of furniture during the preparation and organisation of weddings in the Jidong region was particularly prominent during weddings, and was mentioned by five interviewees and four households (Table 6.1). In the case of household Q92707, the day before the wedding, large household furniture, such as sofas, coffee tables, and TV cabinets, were moved to the storage room temporarily to make space for the banquet setup. The researcher observed one side of the TV cabinet hit the door frame during the move, causing the paint on the cabinet corner to peel off. One leg of the tea table had become loose due to frequent movement.

In addition, on the day of S92906's wedding, the researcher recorded: "*At 2:27 PM, a woman at the table beside the west wall placed two pairs of chopsticks and three bowls into a plastic bag and then left.*" After the wedding the researcher counted the lost items in the four families. For example, the S92906 household lost seven bowls, twenty-seven pairs of chopsticks, and six wooden stools; the Q92707 household lost thirty pairs of chopsticks, four bowls, five plates, and four plastic stools.

These data indicate that damage to furniture and loss of items are two issues of concern during wedding organisations in the Jidong region. In future wedding preparations, families need to pay more attention to protective measures for furniture and make prior arrangements for the safekeeping of items to reduce damage and loss.

6.2.5 Theme 5: Cleaning of Living Room and Bedroom Furniture

During wedding guests' meals in rural Jidong, furniture surfaces are often accidentally spilled with oil, drinks or food residues by guests, leaving stains that are difficult to remove. Four households and five respondents mentioned this problem (Table 6.1). For example, on the wedding day of S92906, where non-participatory observation notes recorded: "*Seven children were playing in the living room, and they knocked over a bottle of drink for the third time... After the villagers finished eating, the entire living room and bedroom were in disarray. The aunt briefly cleaned the dining table in the bedroom with a cloth and broom... The aunt swept the candy wrappers and sunflower seed shells from the kang onto the floor... This was the fourth time the aunt tidied up the scattered stools and trash in the living room today.*"

These observation records reveal that the cleanliness problems during wedding ceremonies are not limited to the living room; bedroom furniture is also affected. The difficult-to-remove stains, scattered trash, and frequent cleaning tasks impose a significant burden on the household. To alleviate this burden, protective measures could be taken for furniture before the wedding, or furniture design could incorporate materials that are easier to clean and maintain, better catering to the demands of rural weddings.

6.3 Semi-structured Interviews and Participant Observation Notes

This section presents data collected from two perspectives: respondents and the researcher. The study included six semi-structured interviews and a four-day participant observation of one household. The findings highlight furniture-related issues encountered by villagers in rural Jidong during the New Year, with problem

types and frequencies detailed in Figure 6.6 and Table 6.2. These data form a crucial basis for the proposed design principles.

Table 6.2 Thematic analysis theme statistics: furniture problems during the new year

Name	Total number of semi-structured interviews / number of people mentioning problems	Number of times questions were mentioned	Total number of families in the New Year / number of families with problems	Total days of participant observation/number of days with problems	Number of times questions appeared in participant observation notes
Theme 6: Problems with the number of pieces of sitting furniture and tableware	6/6	11	1/1	4/4	13
Theme 7: Safety problems caused by excessive types of sitting furniture	6/6	9	1/1	4/3	13
Theme 8: Cleaning of living room and bedroom furniture	6/6	17	1/1	4/3	17

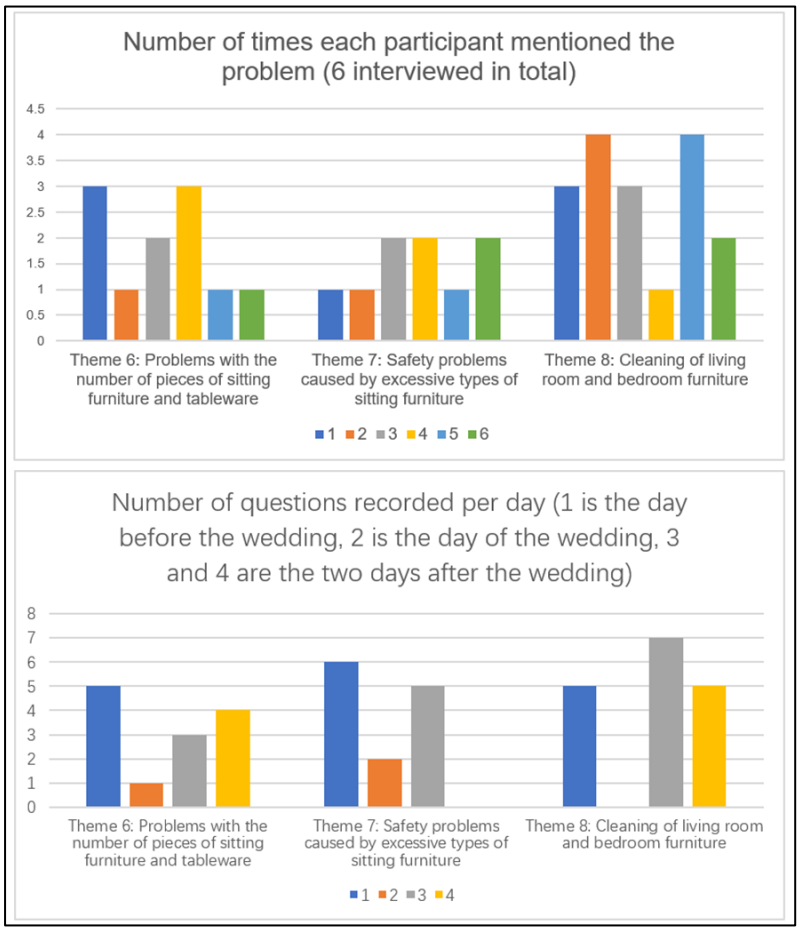


Figure 6.6 Coding of themes six to eight (new year)

6.3.1 Theme 6: Problems with The Number of Pieces of Sitting Furniture and Tableware



Figure 6.7 Q92706 New Year’s Eve gathering in bedroom and living room

As in the case of Jidong village weddings, during the organisation of New Year's events, not only the gathering of family members on New Year's Day, but also relatives and friends need to be gathered at their homes to pay their respects and have meals for 10 days after the New Year, and the number of people can reach up to 40 (Figure 6.7). As in the case of weddings, the problem of insufficient seating and tableware also arises when celebrating the New Year. Six interviewees and one observed family mentioned this problem (Table 6.2).

Therefore, in rural Jidong, during large gatherings, whether for weddings or New Year's celebrations, the problem of insufficient seating and tableware becomes particularly prominent when the number of diners far exceeds that of the household members, directly affecting the dining experience.

6.3.2 Theme 7: Safety Problems Caused by Excessive Types of Sitting Furniture

Similar to weddings, during the New Year, the problem of various stools scattered around the living room and bedroom causing safety hazards arises due to the need to

accommodate guests and family members within a limited home space. This problem was mentioned by all six respondents, but in the observation notes, it was only recorded on the 3 days when 40 guests were received (Table 6.2). Therefore, how to rationally arrange and store a wide variety and a large number of sitting furniture needs attention not only in daily life but is also a design issue that deserves attention during special folk events.

6.3.3 Theme 8: Cleaning of Living Room and Bedroom Furniture

During the New Year, cleanliness problems with living room and bedroom furniture were mentioned by six people and recorded in the four-day observation, except on New Year's Day (Table 6.2). This is mainly due to the traditional culture of needing to clean the entire room to welcome the God of Wealth on the day before the New Year. Cleaning the house is not allowed on New Year's Day, so the dirtied furniture is then cleaned on the two days after the New Year, which mainly consists of the living room eating furniture and the bedroom tables, chairs and seating furniture. This issue is also seriously mentioned during weddings and is an urgent issue that needs to be addressed.

6.4 Summary of Problems and Demands Relating to The Currently Used Furniture in Folklore Activities

Sections 6.2 and 6.3 provided a detailed analysis of the furniture-related problems encountered by villagers in rural Jidong when hosting folklore activities such as weddings and New Year's celebrations at home. The findings are presented in Table 6.3.

Table 6.3 Problems and demands relating to the currently used furniture in organising folklore

events at home

Home space/ activity	Currently used furniture	Specific problems/use scenarios	Demand transformation
Living room/wedding	**Large pieces of furniture (sofa, TV stand, tea table)**	Inconvenient moving of large pieces of living room furniture: household space is limited, but large pieces of living room furniture need to be moved during events, even though narrow doorways and walkways.	Lightweight and modular furniture that is easy to move and reassemble for placement.
Living room and kitchen/Wedding	**Large pieces of living furniture (sofas, TV cabinets, tea tables)**	Large pieces of furniture in the living room are not effectively protected during handling, resulting in frequent damage problems.	The need to protect large pieces of furniture in the living room: protective measures need to be taken to prevent bumps and scratches to furniture during wedding preparations and moving of furniture.
	Small pieces of tableware (bowls, chopsticks, plates), and sitting furniture	Loss of kitchen tableware in the home is particularly serious and can be taken away by guests, either intentionally or unintentionally.	Anti-take-away measures for small furniture
Living room and bedroom / Wedding and New Year	**Living room furniture and bedroom furniture**	Difficulty in cleaning: Furniture surfaces are stained with grease, drinks and food residues and are not easy to clean.	Furniture materials need to be easy to clean/ Stain protection: furniture needs to be protected from staining before the folklore event.
	Household tableware	Insufficient number of tableware: insufficient plates and bowls for serving dishes, temporary borrowing of neighbours.	Expansion of tableware stock
	Sitting furniture	Insufficient sitting utensils: During weddings, the number of sitting utensils is insufficient for the reception of guests, and they need to be borrowed from neighbours. there are too many types of sitting furniture in the home and they are not well organised, causing safety problems.	Increase in the number of sitting utensils Unify the types of sitting furniture

According to the table, three common problems typically arise when rural households organize folklore activities like weddings and New Year celebrations: insufficient sittings and tableware, safety hazards caused by various stool types, and the challenge of cleaning the living room and bedroom furniture.

In addition, two additional problems emerge in the weddings: the difficulty of moving and rearranging large pieces of living room furniture, and the furniture damage and loss. Since the number of participants in wedding activities far exceeds the number of household members, with not only relatives and friends attending but also villagers and even strangers. This results in the complete transformation of the private space of the living room into a public space, where furniture not only needs to be moved to create more activity space but is also prone to damage or loss due to frequent use. Although large folklore activities like weddings are infrequent, typically occurring every 5-6 years, their impact on furniture management is significant and requires special attention.

6.5 Semi-structured Interviews and Participant Observation Notes

When researching problems related to furniture in home-based production in rural Jidong, data was collected from 18 semi-structured interviews and participant observation of 18 production scenarios (Figure 6.8). Specifically, this research first interviewed 8 village shops, 2 mahjong parlours and 8 processing factories, and then observed the working scenes of each.

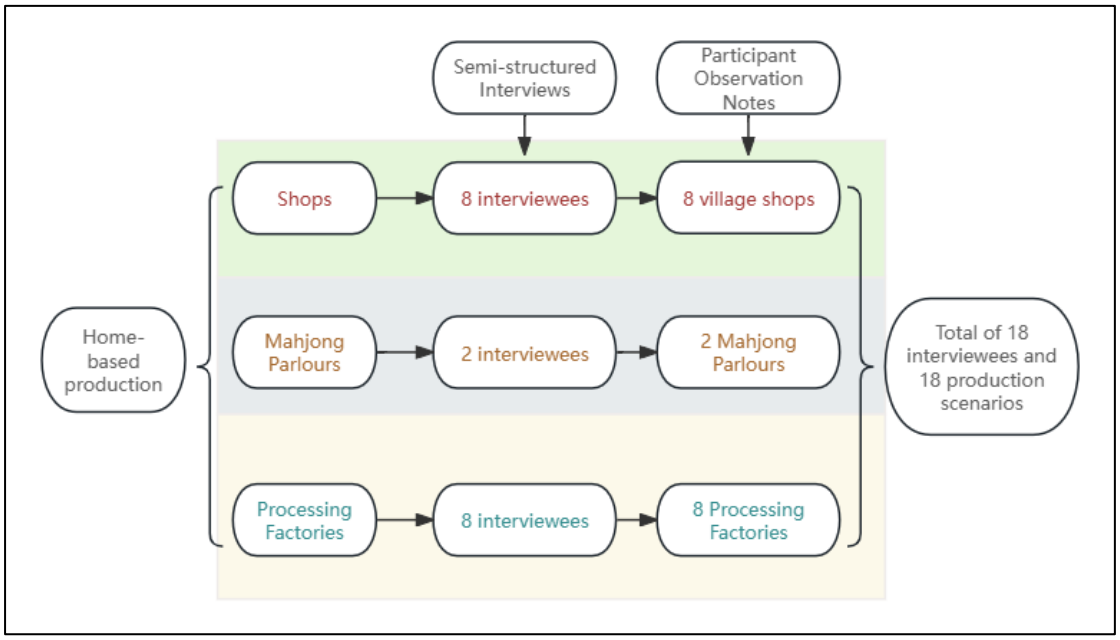


Figure 6.8 Composition of data for Phase 4 (Semi-structured interviews and participant observation notes)

This subsection's thematic analysis is divided into three parts (Figure 6.9). First, Themes 1 to 4 focus on data from interviews and observations in village shops, highlighting common furniture problems. Interviews primarily reflect the views and ideas of shop owners, while observation notes document customer behaviour and interactions from the researcher's perspective. Second, Themes 5 and 6 concentrate on two mahjong parlours, analysing common furniture problems through interviews with parlour owners and observations of customer behaviour. Finally, Themes 7 to 11 address three types of processing factories, including sheet metal workshops, breakfast processing factories, vegetable shed factories, and animal breeding factories. Interview data reflect the perspectives of factory owners, while observation records illustrate the work behaviour of factory employees, revealing common furniture problems in production environments.

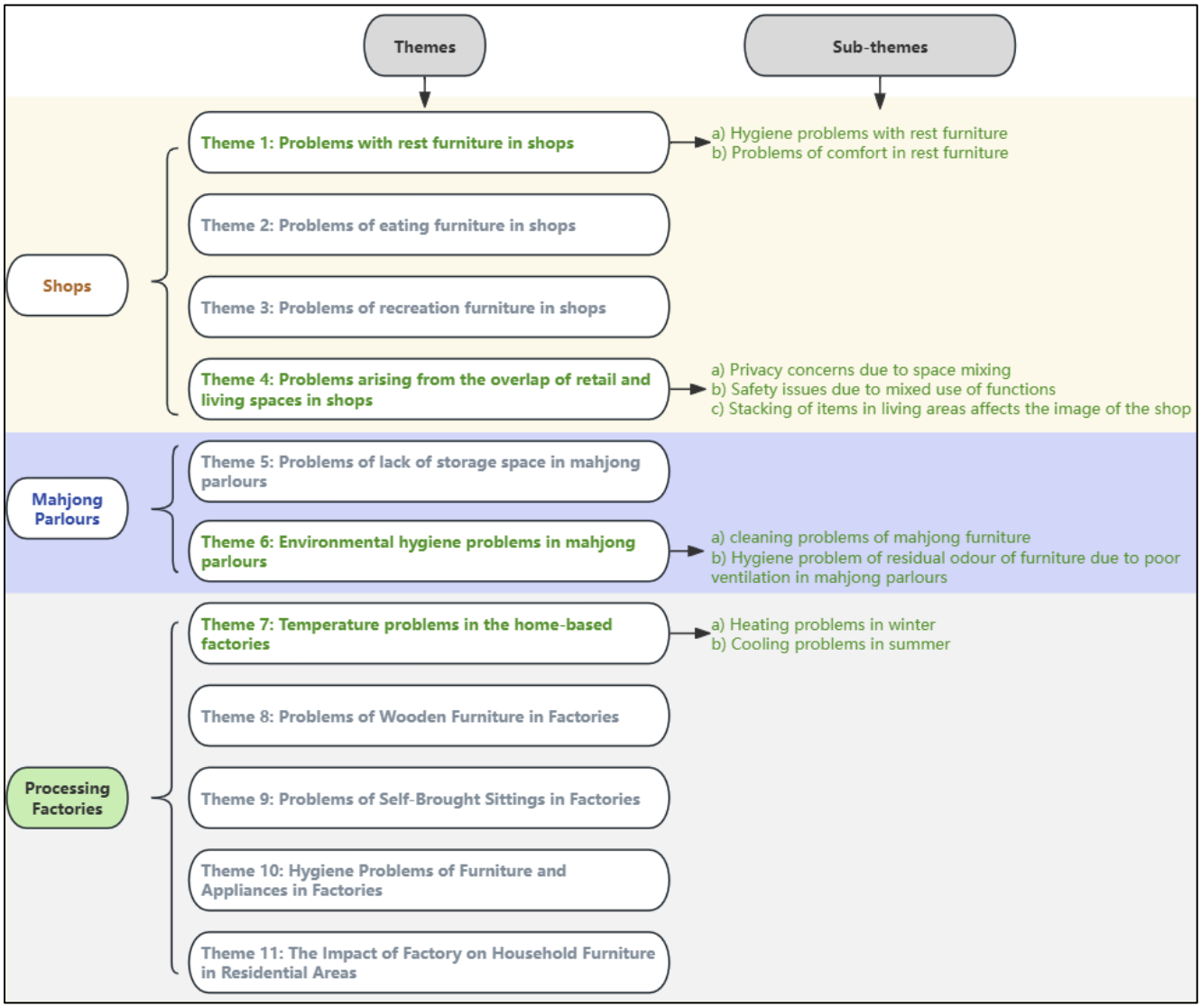


Figure 6.9 Detailed information on Theme 1 to Theme 11 of Phase 4

Table 6.4 presents 11 themes related to furniture in household production environments. Figure 6.10 illustrates the frequency with which each theme or sub-theme was mentioned by eight respondents from village shops during interviews, as well as its occurrence in eight instances of participant observation. The number of mentions ranges from 1 to 5, with a consistently high overall frequency. Figure 6.10 also shows the frequency of these themes mentioned by two interviewees from village mahjong parlours and recorded in the researcher's observations of these locations. It also displays the frequency of mentions by eight respondents from the village and eight processing plants. While variations exist, all themes were referenced,

underscoring their significance. The following sections provide a detailed analysis of each theme.

Table 6.4 Thematic analysis theme statistics: furniture problems during home-based production

Name	Total number of semi-structured interviews / number of people mentioning problems	Number of times questions were mentioned	Total number of households participating in observation/ number of households with problems	Number of times questions appeared in participant observation notes
Theme 1: Problems with rest furniture in shops	8/8	27	8/8	32
Theme 2: Problems of eating furniture in shops	8/8	24	8/8	23
Theme 3: Problems of recreation furniture in shops	8/8	11	8/8	10
Theme 4: Problems arising from the overlap of retail and living spaces in shops	8/8	31	8/8	32
Theme 5: Problems of lack of storage space in mahjong parlours	2/2	2	2/2	6
Theme 6: Environmental hygiene problems in mahjong parlours	2/2	7	2/2	17
Theme 7: Temperature problems in the home-based factories	8/8	25	8/8	25
Theme 8: Problems of wooden furniture in factories	8/8	11	8/8	13
Theme 9: Problems of self-brought sittings in factories	8/7	14	8/8	17
Theme 10: Hygiene problems of furniture and appliances in factories	8/8	8	8/8	19
Theme 11: The impact of factory on household furniture in residential areas	8/8	19	8/8	21



Figure 6.10 Coding of themes one to eleven (shop, mahjong parlours, processing factories)

6.5.1 Theme 1: Problems with Rest Furniture in Shops

During the second phase of fieldwork, three types of villages shops were identified based on the time of their conversion. These shops were converted from Type A yards and Type B yards around 1994, 2015, and 2020, respectively. There have been significant changes in the layout of rest areas and the configuration of rest furniture in these three types of shops.

In the earliest shops, a private rest area was specifically designated and equipped with kang furniture, providing a relatively spacious and comfortable rest space. Over time, the rest areas in shops gradually shrank, and the rest furniture evolved from kang to sofas, beds built from cement or bricks, and even simple sittings. Currently, village shops no longer have independent private rest areas, with only a single wooden bed for the staff or owner placed behind the cashier's desk, and household seating (sitting furniture) scattered in the selling area for customers to use. Regardless of the type of shop, there are two problems with the rest furniture (Table 6.5).

Table 6.5 Sub-themes of Theme 1: Problems with rest furniture in shops

Name	Total number of semi-structured interviews / number of people mentioning problems	Number of times questions were mentioned	Total number of households participating in observation/ number of households with problems	Number of times questions appeared in participant observation notes
Theme 1: Problems with rest furniture in shops	8/8	27	8/8	32
a) Hygiene problems with rest furniture	8/8	13	8/8	11
b) Problems of comfort in rest furniture	8/8	14	8/8	21

Firstly, the hygiene of the rest furniture in shops is difficult to maintain. This problem was widely mentioned by eight interviewees and was detailed in the participatory observation of eight shops. The types of rest furniture placed in shops are consistent with those mentioned in the residential house, including wooden stools, iron stools, plastic stools, wooden seats and sofas, among which the sofa problem is particularly prominent in the shop. For example, D93005's observation diary shows that several fabric sofas placed near the window of the shop had become visibly discoloured, with yellowing, water stains, oil stains, and dust on the fabric, emitting a slight odour. Although the shop owner occasionally cleans with a broom, thorough cleaning of the sofas is rarely carried out, leading to unsatisfactory hygiene conditions. Customers

often wipe the sofa's surface before use, and some customers even leave early due to discomfort.

Secondly, regarding the comfort of rest furniture in shops, the study found that this problem needs to be explored from two perspectives. On the one hand, the comfort of rest furniture provided by shops for customers' needs to be improved. This problem was mentioned by only one interviewee, but observation notes revealed that five out of eight shops had this problem. Among these shops, three provided sofas as rest furniture. For example, in the observation record of the S92916 shop, "*I chose to sit on the sofa in the corner, casually picked up a magazine, pretending to read it, but was actually observing the behaviour of customers in the shop. In about half an hour, five customers came in, four of whom walked towards the sofa area after checkout and sat down. They had no intention of leaving immediately. They started chatting with each other, discussing recent village news, and even picked up a few snacks from the table, apparently intending to buy more. Meanwhile, the shop owner also joined their conversation, and the whole atmosphere was very relaxed. After 20 minutes, they got up to check out, bought a few snacks and a bottle of drink, and left, saying they would come back another day.*" In contrast, in the five shops that used ordinary sittings, customers had shorter stays, and only one instance was recorded where a customer used a small stool to briefly organize items. This demonstrates that comfortable seating, such as sofas, can extend customers' stay in the shop and increase their desire to purchase.

On the other hand, the comfort of seating or reclining furniture provided for shop owners or employees also needs improvement. This problem was mentioned in all eight interviewees' responses and recorded in the observation notes of all eight shops. Shop owners and employees are different from customers in that they use the rest furniture for a longer period, more frequently, and have higher requirements for the

comfort of the rest furniture. S92917 respondents reported that sitting on a store stool for a long time often felt poor blood circulation in the legs and numbness in the feet. Regarding reclining furniture, the main problem centres on the wooden bed behind the counter. Q92714 observation records show that during a 2-hour nap on the wooden bed, the shop owner frequently changed positions 59 times. He explained that the wooden beds currently in use are too hard, and prolonged leaning or lying on them can easily cause discomfort in the waist and back.

In summary, there are clear problems with the rest furniture in the shop in terms of hygiene and comfort, and there is an urgent need for design intervention.

6.5.2 Theme 2: Problems of Eating Furniture in Shops

The issues related to eating furniture in shops are primarily reflected in two aspects: insufficient quantities of tableware and sitting, and safety hazards caused by the excessive variety of sitting types. These issues were mentioned by eight respondents and documented during field observations in eight shops (Table 6.4).

In prior research on the currently used furniture during traditional festivals hosted at home, these problems were similarly highlighted. Moreover, during the third phase of this research, which examined issues with currently used furniture in daily life, these problems frequently reappeared. This indicates that these issues are both widespread and representative, deeply embedded in various aspects of people's lives, and have become pressing problems that urgently require resolution.

6.5.3 Theme 3: Problems of Recreation Furniture in Shops

The problem of recreation space in shops mainly revolves around the use of televisions. In village shops renovated around 1994, televisions were typically mounted on the walls, serving as a source of entertainment and attracting customers. However, starting from 2015 and in subsequent years (including shops renovated from old and Type B yards in 2020), televisions are no longer placed in shops. Shop owners (F92601, D93005, S92919) provided two reasons to explain this change. First, the presence of a television may distract customers, leading them to overlook their shopping needs, thereby reducing shopping efficiency. Second, television programs divert the shop owner's attention from customers, affecting the quality of service and shop management.

Based on the above reasons, since 2015, shops that have undergone renovations decided not to set up televisions in the selling area. The social and entertainment space in shops has either completely disappeared or been merged with the dining space. This change reflects an adjustment in the shop's function to better meet customer needs and improve operational efficiency.

6.5.4 Theme 4: Problems Arising from The Overlap of Retail and Living Spaces in Shops

In the layout of rural shops, the retail area is often closely integrated with the living space, sometimes even sharing the same area. While this mixed-use layout provides convenience for daily operations and living, it also gives rise to the following three problems (Table 6.6).

Table 6.6 Sub-themes of Theme 4: Problems arising from the overlap of retail and living spaces in shops

Name	Total number of semi-structured interviews / number of people mentioning problems	Number of times questions were mentioned	Total number of households participating in observation/ number of households with problems	Number of times questions appeared in participant observation notes
Theme 4: Problems arising from the overlap of retail and living spaces in shops	8/8	31	8/8	32
a) Privacy concerns due to space mixing	8/8	8	8/8	8
b) Safety issues due to mixed use of functions	8/7	7	8/8	10
c) Stacking of items in living areas affects the image of the shop	8/8	16	8/8	14

Firstly, the unclear boundary between the retail and living areas leads to privacy concerns. Customers may inadvertently enter the family living space, disrupting household activities. This problem was mentioned by eight interviewees and recorded in all eight shops observed. For example, a respondent from S92917 mentioned: "*Last week, while I was preparing dinner in the kitchen, a customer walked straight into the kitchen looking for goods... Sometimes we have family activities at home, such as a child's birthday party or gatherings with friends. These activities are sometimes seen or interrupted by customers.*" Such situations highlight that the lack of clear boundaries between the retail and living areas can easily infringe on family privacy. To address this problem, it is recommended to design reasonable spatial partitions within the shop, such as setting up screens or marking areas, to ensure the privacy of family activities while enhancing the shopping experience for customers.

Secondly, the shared passageways or spaces between the living area and the retail area pose safety hazards. Seven interviewees raised this concern, and it was observed in all shops. For instance, in the S92916 shop, the kitchen shares a passageway with the retail area. The respondent stated: "*Hot water and cooking fumes from the kitchen can easily splash onto goods in the retail area.*" Additionally, in the Q92714 shop, the bedroom shares a passageway with the retail area, and the respondent noted: "*My child often runs around the shop and has bumped into customers several times.*"

These instances indicate that shared passageways and spaces increase safety risks. Therefore, it is recommended to consider separating the living area from the retail area during the design process, planning traffic flow lines more reasonably, and installing partitions and safety railings to reduce potential safety risks.

Lastly, the disorganized placement of household items in the retail area affects the shop's cleanliness and professional image. This problem was mentioned by eight interviewees and recorded in all eight shop households. Observation notes from S92916 indicate: "*Some cleaning supplies for the kitchen, such as brooms and mops, are placed in the corners of the retail area. Children's toys and some clothing are also placed in the shop's corners...Two customers entered the shop, saw the scattered household items on the floor, and one said: 'I feel like the stuff sold here might have already been used by the shop owner, it's not clean.*"

All eight interviewees pointed out that the root of this problem lies in the limited space of living area, forcing the owner to place some household items in the retail area. One respondent directly stated: "*We eat and sleep in this shop, so it's impossible to completely clear out these household items from the shop.*" So, it is suggested that future designs include additional storage cabinets or storage spaces to organize and concentrate household items, ensuring they are reasonably placed in either the retail area.

6.5.5 Theme 5: Problems of Lack of Storage Space in Mahjong Parlours

In the two observed mahjong parlours, there is a recurring problem of customers' items being left in disarray, which not only affects the cleanliness of the space but also leads to the loss of valuable items. This problem was mentioned by both interviewees and was recorded multiple times in the observation notes (Table 6.4).

The observation diary for S92908 noted: "*At the entrance of the mahjong parlour, seven bags and a bucket were already piled up…Fourth customer: she navigated around the items at the entrance and casually placed her bag there... The sixth customer came in and hung his jacket carelessly in a gap near the cash register, pulled out his keys and wallet from his pocket, placed them in a plastic bag, walked to the mahjong table, sat down, and left the plastic bag at his feet as he started to play.*" These records indicate that there is a lack of designated storage areas in the mahjong parlour, resulting in customers' items being placed haphazardly, which leads to poor cleanliness, difficulty in movement, and even loss of belongings. To address this problem, it is recommended that the mahjong parlours provide small storage cabinets or hooks for customers to shop for personal and valuable items, thus maintaining cleanliness around the mahjong tables and seating, and alleviating movement obstacles.

6.5.6 Theme 6: Environmental Hygiene Problems in Mahjong Parlours

Table 6.7 Sub-themes of Theme 6: Environmental hygiene problems in mahjong parlours

Name	Total number of semi-structured interviews / number of people mentioning problems	Number of times questions were mentioned	Total number of households participating in observation/ number of households with problems	Number of times questions appeared in participant observation notes
Theme 6: Environmental hygiene problems in mahjong parlours	2/2	7	2/2	17
a) cleaning problems of mahjong furniture	2/2	5	2/2	10
b) Hygiene problem of residual odour of furniture due to poor ventilation in mahjong parlours	2/1	2	2/2	7

The environmental hygiene problems in mahjong parlours primarily involve two aspects (Table 6.7). Firstly, mahjong tables and chairs frequently come into contact with food, beverages, or cigarette ashes, leading to stains that make the furniture dirty and difficult to clean, particularly for upholstered seats or fabric furniture. This

problem was mentioned by both interviewees and was recorded in the two mahjong parlours. For instance, a respondent from S92908 noted: "*Customers often snack, drink, or smoke while playing mahjong. Many times, beverages spill on the table, and ashes fall onto the chairs, making it hard to clean. Oil stains and dirt can remain on the table and seep into the wood grain, making cleaning particularly laborious... After each customer leaves, we need to spend a lot of time wiping down the tables and chairs, and sometimes we need to use detergent to get the grease out.*" To address this problem, the respondent from D93016 suggested using waterproof and stain-resistant tablecloths or table materials and considering removable chair covers or more durable materials to enhance cleaning convenience.

Secondly, mahjong parlours are typically enclosed spaces, especially in winter, where the odours of smoke, sweat, and food can easily linger on the furniture, impacting environmental quality and customer experience. This problem was mentioned by one respondent and observed in the two mahjong parlours. The observation diary for S92908 records: "*As soon as I entered the mahjong parlour, a strong, pungent smell hit me, accompanied by a warm draft. I found that during mahjong games, everyone was continuously smoking, and the smell permeated the air, adhering to the upholstered chairs and tables. Even after the shop owner placed four air fresheners, the strong odour of smoke was still palpable. Then there was the smell of sweat; the whole mahjong parlour was very warm, the windows were tightly closed, and there was no airflow. The indoor temperature reached 29 degrees Celsius, and I was sweating even without playing mahjong; those who were excited about the games were sweating profusely, taking off their clothes and leaning close to the game tables, which had a very strong smell of sweat. Finally, there was the smell of food; eight customers had eaten quite a bit of fried food at the table, leaving greasy odours on the tables and chairs.*" Although the shop owners tried using air fresheners to mask the odours, it only had a short-term effect. They also considered installing a better ventilation system, but due to space constraints and high costs, it was difficult to

implement. Therefore, in future designs, it may be beneficial to replace furniture materials with those that are easy to clean and do not retain odours, such as waterproof and stain-resistant tablecloths and washable chair covers.

In summary, the environmental hygiene problems in mahjong parlours primarily focus on the difficulty of cleaning mahjong furniture and odour retention in enclosed environments. Future designs should address these two aspects.

6.5.7 Theme 7: Temperature Problems in The Processing Factories

Table 6.8 Sub-themes of Theme 7: Temperature problems in the home-based factories

Name	Total number of semi-structured interviews / number of people mentioning problems	Number of times questions were mentioned	Total number of households participating in observation/ number of households with problems	Number of times questions appeared in participant observation notes
Theme 7: Temperature problems in the home-based factories	8/8	25	8/8	25
a) Heating problems in winter	8/8	8	8/8	10
b) Cooling problems in summer	8/8	17	8/8	15

In the Jidong region, winter temperatures are relatively low, making it crucial to employ heating devices to maintain an appropriate temperature in production spaces. However, due to the large area of the factories, the effectiveness of heating devices is uneven, particularly near doors and windows, where temperatures are notably lower. This problem has been observed in all eight factories and confirmed by respondents (Table 6.8). For instance, an employee from the F92605 noted, "*We use four electric heaters and two coal stoves, but the factory is too large...My desk is near the window, and it's super cold in winter, and it's common for my upper body to freeze.*" The owner of D93003 proposed improvements, planning to install insulated curtains and door curtains to stabilize indoor temperatures.

The high temperatures in summer also present significant challenges for production environments in factories. In the Jidong summer, when outdoor temperatures approach 35°C, the indoor temperatures are often even higher. Observations indicate that all eight factories in the village suffer from oppressive heat in the workshops, and none are equipped with air conditioning. The owner of the S92909 steamed bun factory commented, "*We originally had seven ceiling fans in the workshop, and now we've bought four large floor fans, but the effect is minimal; it's practically useless... Opening the windows only brings in hot, stuffy air, and we can directly place fresh eggs on the floor in the morning, and they're cooked by noon, saving on electricity.*" An employee from the F92605 sheet metal workshop mentioned, "*Initially, we tried opening several large windows to ventilate, but the hot air coming in made the workshop even stuffier, so we stopped.*" The owner of the F92605 mentioned future strategies to install cooling machines, but they are currently in the planning stage due to high equipment costs. The owner of D93003 home-based farming is also considering adding heat insulation facilities, such as insulated curtains or coatings, to reduce external heat influence and ensure a stable production environment.

In conclusion, future improvement strategies for processing plants must address the dual challenges of winter heating and summer cooling to enhance worker comfort and maintain production efficiency.

6.5.8 Theme 8: Problems of Wooden Furniture in Factories

In rural processing factories, furniture is commonly made from discarded wooden furniture sourced from households. However, these wooden pieces exhibit various problems in the complex work environment characterized by high humidity, high temperatures, and splattering metal debris, particularly concerning durability and

safety. This phenomenon has been noted in all eight factories (Table 6.4). A worker from the D93012 vegetable shed factory stated, "*In summer, when it rains, the air is full of moisture, and the wood absorbs water, causing deformation; some stool legs have even started to mould, making them unreliable to sit on. The cabinets are also starting to mould inside, giving off a strong odour.*" Moreover, observations from the F92605 sheet metal workshop indicate that wooden furniture cannot withstand the dangers posed by high temperatures and metal debris in the work environment. When workers operate machines, metal fragments can splash and embed into wooden sitting, causing instability in the chairs. Some wooden stools have accumulated a significant amount of metal debris on their legs, requiring workers to repeatedly check the stability of the furniture before sitting down to prevent accidents.

In conclusion, to address the problems above, it is recommended that factories gradually phase out wooden furniture in favour of materials that are heat-resistant, wear-resistant, moisture-proof, and corrosion-resistant. If conditions necessitate continued use of wooden furniture, effective measures must be taken to extend its lifespan and ensure safety during operation.

6.5.9 Theme 9: Problems of Self-Brought Seating in Factories

In the factory working environment, employees commonly use self-brought seats. However, these chairs do not always meet specific work requirements, affecting work efficiency. This problem was recorded from seven respondents and eight factories (Table 6.4). For instance, notes from observations at the S92909 steamed bun factory revealed that an employee pointed out, "*We all brought our stools from home...Since our wages are calculated based on the number of buns produced, moving the sitting wastes time.*" Similarly, an employee from the D93002 sheet metal workshop noted, "*We have to change machines six times a day. Each time we switch, we have to move*

the stools to match the position of the machines. Self-brought sittings are not easy to adjust, and aligning them with the machines is particularly troublesome."

To address these problems, it is recommended to set up a designated seat on each device or work area, so that employees can switch between different machines without moving their own seats, improving work efficiency.

6.5.10 Theme 10: Hygiene Problems of Furniture and Appliances in Factories

In the study of eight factories, the researcher found that all factories faced hygiene problems related to furniture and appliances. This problem was recorded from seven respondents and eight factories (Table 6.4). For example, at the S92909 steamed bun factory, the researcher observed that the surfaces of the furniture tended to accumulate flour, dirt, and other stains. One employee remarked, "*Since the food is processed at high temperatures, I think it's not a big problem; after all, it's more convenient to buy buns here than to make them ourselves.*" Conversely, another employee disagreed: "*Since I started working here, I haven't bought any buns from the factory because the machines are too dirty, and the buns are dirty as well; it's simply unacceptable.*" Similar problems were observed in other factories. The owner of the F92605 sheet metal workshop noted, "*The new floor fan we bought a few days ago has already accumulated a thick layer of dust on the surface after just three days of use as if it had never been cleaned.*"

To address these problems, it is suggested that factories adopt materials with waterproof and oil-proof properties for surface treatment of furniture and equipment to minimize dirt accumulation. Additionally, increasing the frequency of cleaning and conducting regular deep cleaning also helps improve the hygiene conditions of the factories, thereby enhancing product quality.

6.5.11 Theme 11: The Impact of Factory on Household Furniture in Residential Areas

Workers and owners of processing factories often engage in jobs that are heavily polluting, leading them to bring dirt from their workplaces into their homes, which results in the living spaces, especially the living rooms, becoming extremely dirty. This problem has been repeatedly mentioned in participatory observations of eight processing factories and corroborated by feedback from eight respondents. A worker from the F92605 sheet metal workshop stated, "*When I usually get home, I really like to sit on the sofa. My wife always says that as soon as I come home, the living room is filled with dirt, sand, and mud.*" The factory owner also mentioned that because factory is located in the yard, the furniture in the main house often accumulates dust and dirt, particularly in the living room. Neighbours near the factory reported similar problems. One neighbour living next to the D93002 commented, "*In the summer when we open the windows to ventilate, the humidity, metal scraps, and iron dross from the factory often get blown into our home. Dust accumulates on the surfaces of our furniture and in the gaps in the windowsills, and I have to use cleaning agents and a damp cloth almost every day to remove this dirt. Even with daily cleaning, the effectiveness is still limited.*"

This phenomenon indicates that the working environment of factories significantly affects the household furniture of workers, owners, and their neighbours. To improve this situation, it is recommended that the living area choose furniture materials that are easier to clean and more dirt-resistant. Additionally, installing air purifiers can help reduce dust and pollutants in the air, thereby improving the cleanliness of the living environment.

6.6 Summary of Problems and Demands Relating to The Furniture Used in Home-based Production

This section presents the findings of the study on the problems arising from the currently used furniture in the context of the special lifestyle in rural Jidong. Table 6.9 focuses on furniture problems and needs in three main scenarios: village shops, mahjong parlours, and processing factories.

Table 6.9 Problems and demands relating to currently used furniture in in home-based production

Space/ activity	Currently used furniture	Specific problems/use scenarios	Demand transformation
Resting space in the village shop	Sitting furniture (sofas, benches)	Problems of poor hygiene: Sitting furniture in shops, especially fabric sofas, are difficult to clean thoroughly and tend to accumulate dirt and odours. Low comfort level of sitting furniture	The hygiene and comfort of the sitting furniture needs to be improved.
	Lying equipment	The boardwalk beds used by shop owners and clerks in the resting area behind the counter are not sufficiently comfortable.	Improve the comfort of the wooden beds in the resting area, e.g. by using wooden beds with soft mattresses
Eating space in the village shop	Household tableware	Insufficient number of tableware: insufficient plates and bowls for serving dishes, temporary borrowing of neighbours.	Expansion of tableware stock
	Sitting furniture	Insufficient sitting utensils: During weddings, the number of sitting utensils is insufficient for the reception of guests, and they need to be borrowed from neighbours. there are too many types of sitting furniture in the home and they are not well organised, causing safety problems.	Increase in the number of sitting utensils Unify the types of sitting furniture

Recreational spaces in the village shop	Merger or disappearance of spaces	The shop's recreation space disappears completely or merges with the eating space.	The problems that arise in mergers are similar to those in the shop's eating space.
Retail and living spaces in the village shop	Intersection of spaces	Poorly defined boundaries between retail and living areas make it easy for customers to unintentionally enter domestic spaces, disturbing family activities and affecting family privacy. Kitchen, bedroom and retail area share the passageway, which is easy to cause oil splash, fall and other dangers when customers choose goods.	Safety and privacy needs: the access to the living area and retail area needs to be reasonably planned to reduce customer safety hazards.
	Storage system	Living goods are stacked randomly in the retail area, affecting the shop's tidiness and aesthetics.	Need to improve the storage capacity of daily necessities in the selling area of the shop, such as storage cabinet design.
Mahjong Parlour	Storage cabinets or storage area	Lack of storage area leads to customers' belongings being left lying around, obstructing walking and even causing customers' valuables to be lost.	Provide clear storage areas or storage cabinets with safety belt locks for customers to store their belongings.
	Mahjong tables and chairs	Mahjong furniture is difficult to clean: Mahjong tables and chairs are easily contaminated by food, drinks, and cigarette ash, making cleaning difficult.	Mahjong Furniture Cleaning Needs: Mahjong tables and chairs need to be water and stain resistant, easy to clean and dismantle or hard-wearing materials.
	Odour problems	Poor ventilation: closed space leads to residual smoke, sweat and food odour making the air quality poor and affecting the customer experience.	Odour control needs
Processing factory	Production environment improvement measures	Cold in winter and hot in summer	Using cost-effective warming and cooling equipment or wall materials.
	Wooden furniture	Wooden furniture is prone to warping and mould, and workers are concerned about its safety. Metal shavings can become embedded in wooden seats, causing instability and requiring frequent inspections by workers.	Durability: Furniture needs to withstand the effects of humidity and temperature. Safety: Ensuring the stability of the furniture. Maintenance: Effective maintenance strategies to prolong service life.
	Seats	Employees need to move the sitting device when switching between equipment, which affects work	Fixed seat devices should be next to each piece of equipment to reduce movement.

		efficiency.	
	Furniture and appliances	Furniture and appliance surfaces tend to accumulate flour and dust, making them difficult to clean and affecting product quality and hygiene.	Increase cleaning frequency and efficiency. Use furniture and appliance materials that are easy to clean and durable.
	Furniture in residential areas	Workplace dirt brought into the home: Processing plant workers and owners bring in workplace dirt when they return home, resulting in a dirty home environment. Processing plants generate dust during production, which affects the air quality in living areas.	Household furniture should be made of materials that are easier to clean and resistant to dirt to reduce the cleaning burden. Air purification needs

Firstly, the problems in village shops are mainly focused on four aspects. Regarding rest furniture, hygiene and comfort of sitting issues are particularly prominent, along with requests for improved comfort in lying furniture. Eating furniture lacks sufficient tableware and sittings, and the diverse designs of stools raise safety concerns. This problem also arises in home-based folk activities. Social and entertainment furniture primarily involves using appliances (televisions). As the social and entertainment spaces in shops gradually disappear or merge with eating spaces, the problems arising from merged space can reference the relevant solutions for eating space problems. The boundary between the retail area and the living space is blurred, which affects the shopkeeper's privacy and customers' safety. Moreover, living supplies are often haphazardly placed in the retail area, necessitating storage furniture design to optimize space utilization and enhance orderliness.

Secondly, the furniture problems in mahjong parlours mainly focus on storage space and cleanliness. Unlike village shops, the storage problem in mahjong parlours primarily concerns the lack of storage space for customers' personal belongings, creating an urgent need for specially designed storage furniture. Meanwhile, the mahjong tables and chairs present challenges in cleanliness, especially regarding

material selection and maintenance. Closed space leads to residual smoke, sweat, and food odour, affecting air quality and the customer experience.

Finally, the furniture problems in processing factories are concentrated in five aspects. The production environment is too cold in winter and hot in summer, and it is urgent to improve the environmental conditions to improve workers' comfort and work efficiency while controlling energy costs. The durability and safety of wooden furniture are inadequate, requiring redesign or improvement to meet modern production needs. The adaptability and stability of sittings are insufficient, impacting employee work efficiency and operational safety. Implementing fixed seat designs is recommended to resolve the frequent movement of sittings and their mismatch with production equipment. Furniture and appliances easily accumulate dirt, necessitating the use of dirt-resistant materials and improved hygiene through increased cleaning frequency. The dirt brought in by the factories often leads to a dirty household furniture environment around the factories and affects the hygiene of the neighbourhood.

6.7 Summary of Phase Four

In this chapter, the researcher employed semi-structured interviews, participatory observation notes, and non-participatory observation notes, along with dual perspectives from respondents and researchers, to conduct an in-depth analysis of furniture problems and needs in the context of the unique lifestyle in rural Jidong using NVivo software. Through systematic data processing and coding, eight main themes regarding household celebrations and eleven themes related to in home-based production were summarized. Figure 6.11 summarises all the furniture where problems have arisen from the themes in this chapter. The corresponding design principles for this problem furniture are given in Chapter 8.

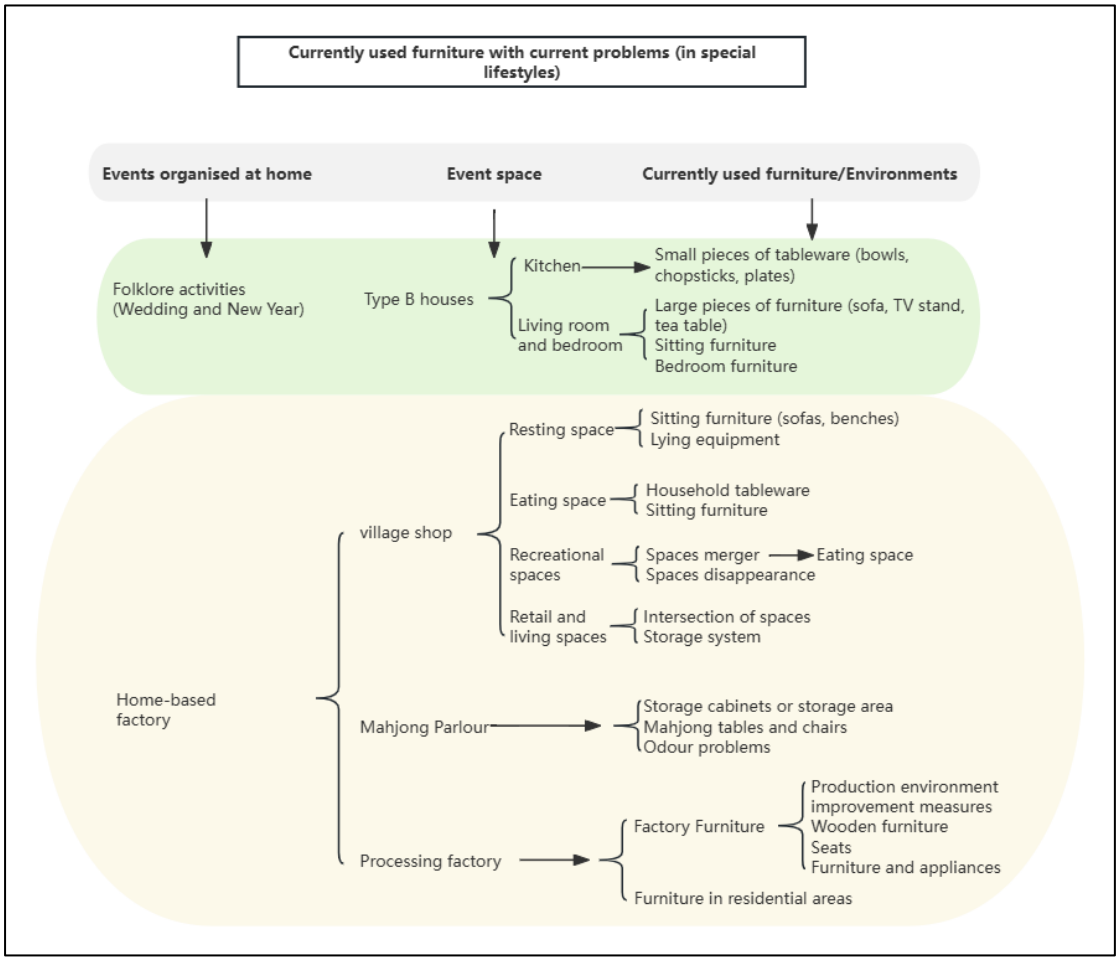


Figure 6.11 The current furniture with serious problems in special lifestyles

7 Findings and Analysis from phase Five

7.1 Introduction

This section aims to comprehensively address furniture design principles by collecting data on the preferences of Jidong rural villagers regarding household furniture. Under the researcher's guidance, 232 questionnaires were distributed offline, with 203 valid responses collected, which were then manually imported into SPSS for quantitative analysis. This section's data analysis primarily utilizes descriptive analysis and cross-analysis.

7.2 Demographic Characteristics of the Sample

The statistical variables covered in the questionnaire include gender (Question 1), age (Question 2), height (Question 3), number of family members (Question 4), total monthly household income (Question 6), and the main source of household income (Question 5, multiple choices). The following are each variable's statistical results and analysis (Figure 7.1).

Table 7.1 Frequency analysis results

Name	Option	Frequency	Percentage (%)
Gender	Male	65	32.02
	Female	138	67.98
Age	Under 20 years old	36	17.73
	20-40 years old	57	28.08
	40-60 years old	96	47.29
	Over 60 years old	14	6.90
Height	Below 150cm	5	2.46
	150-175cm	169	83.25
	175cm or above	29	14.29
Family members	1 person	2	0.99
	2-3 persons	74	36.45
	3-5 persons	109	53.69
	More than 5 persons	15	7.39
	Other	3	1.48
amily's total monthly income	Less than 5000	56	27.59
	5000—10000	71	34.98
	10000—15000	18	8.87
	15000—22000	11	5.42
	Not convenient to discuss	47	23.15
Total		203	100.0

Gender

The survey data indicates that among the participants, 65 were male, accounting for 32.02%, while 138 were female, accounting for 67.98%. Although the proportion of females is higher, this does not imply that the total number of females exceeds the number of males in the region. The survey results were greatly influenced by the specific context during the distribution of the questionnaires. In Jidong rural families, women typically take on more household duties and spend more time at home.

Therefore, the researcher was more likely to engage female respondents during the survey process, leading to a higher proportion of female samples.

Age

The respondents of this questionnaire were mainly middle-aged individuals, with the 40-60 age group accounting for 47.29% of the total sample. The 20-40 age group accounted for 28.08%, while those under 20 and over 60 accounted for 17.73% and 6.9%, respectively.

Height

The participants' height data showed that the majority (83.25%) were between 150 and 175 cm. This data reflects the general height standard in rural Jidong and suggests that this height range should be considered in furniture design strategy.

Number of Family Members

The number of family members in rural Jidong households is mainly concentrated in the 3-5 persons range (53.69%), followed by 2-3 persons (36.45%). This result is consistent with the previous qualitative survey data, indicating that rural families in the region are typically extended or nuclear families. Only a very small proportion of families (0.99%) are single-person households.

The number of family members determines the amount of furniture used in daily life. The questionnaire data suggests that in daily life the need for the number of furniture will not be high, but in the previous study it was found that the number of furniture, especially tableware and sitting stools, is high in terms of type and quantity, and there

is even a problem of insufficient quantity in special lifestyles. This paradoxical conflict in the design strategy needs to be resolved.

Household Income

The survey results show that 27.59% of households have a monthly income below 5,000 yuan, while 34.98% earn between 5,000 and 10,000 yuan per month. Overall, the economic situation of rural households in Jidong is sufficient to meet basic furniture purchasing needs, but certain price constraints remain on high-consumption items. Therefore, furniture design principles should consider the economic constraints of this income level.

Main Source of Household Income

In the survey on the main source of household income (Figure 7.2), nearly half of the participants (43.95%) stated that they primarily rely on income from nearby employment, followed by income from home-based production (36.32%). In contrast, income from agriculture accounted for a relatively low proportion (13.90%). This suggests that the economic model of rural households in Jidong area has shifted from traditional agriculture to off-farm work and self-sufficient home-based production.

Table 7.2 Response rate and popularization rate of main source of household income

Item	Responses		Popularization Rate (n=203)
	n	Response Rate	
Farming	31	13.90%	15.27%
Home-based production	81	36.32%	39.90%
Other	13	5.83%	6.40%
Work near home	98	43.95%	48.28%
Total	223	100%	109.85%

Note: Goodness-of-fit test: $\chi 2=87.224, p=0.000$

7.3 Analysis of the Currently Used Furniture and Factors Influencing Purchase

This section conducts a descriptive analysis of the questionnaire results from questions 7 to 12, exploring the current state of furniture usage among villagers, evaluations of convenience, and the driving factors behind purchasing new furniture.

Table 7.3 Villagers' length of stay in different rooms

Name	Option	Frequency	Percentage (%)
7. Where do you spend the most time in a day?	Bedroom	120	59.11
	Living room (hall)	65	32.02
	Kitchen	10	4.93
	Bathroom	7	3.45
	Side room	1	0.49
Total		203	100.0

Regarding the analysis of the time villagers spend in various house rooms, the results in Table 7.3 indicate that most participants primarily spend time in the bedroom and living room, accounting for 59.11% and 32.02%, respectively. This demonstrates that the bedroom and living room are the villagers' core spaces of daily life, while the kitchen and bathroom are used relatively less, mainly for specific activities.

Regarding furniture convenience (Table 7.3), over 59% of participants perceive the furniture in the bedroom and living room as “average” or “inconvenient.” Similarly, 58% of participants find kitchen furniture to be insufficiently convenient. These results indicate that the current furniture design in rural households in Jidong is inadequate, failing to fully meet the practical needs of villagers.

Table 7.4 Furniture convenience in different rooms

Item	Very inconvenient	Somewhat inconvenient	Neutral	Somewhat convenient	Very convenient
Bedroom (Inner room)	8.37%	12.32%	20.2%	38.92%	20.2%
Living room (Hall)	9.36%	12.32%	19.21%	38.92%	20.2%
Kitchen	9.85%	13.3%	18.72%	36.95%	21.18%

Table 7.5 Evaluations of furniture usage status

Name	Sample Size	Minimum	Maximum	Mean	Standard Deviation	Median
The furniture itself is of poor quality	203	1.000	5.000	2.463	1.026	2.000
Don't know how to use furniture	203	1.000	5.000	2.350	1.010	2.000
Furniture design is not reasonable, it is difficult to use	203	1.000	5.000	2.498	1.026	2.000
Furniture can be insufficient during festivals	203	1.000	5.000	2.749	1.126	3.000
Normally, there are unused furniture in the house	203	1.000	5.000	2.882	1.133	3.000

Among the five evaluations of furniture usage status (Table 7.5), respondents rated the quality of furniture as average, with a mean score of 2.463, close to neutral, indicating that most respondents consider the quality of their furniture to be fair, yet they still express notable dissatisfaction. Next, regarding the statement “Don't know how to use furniture,” the average score was 2.350, suggesting that while most respondents understand how to use their furniture, a considerable proportion still feels confused. The evaluation of furniture design (average score of 2.498) similarly reflects dissatisfaction among respondents. Regarding the perspective that there is insufficient furniture during festivals, the score was 2.749, indicating that villagers generally feel a shortage of furniture for special occasions. Finally, the evaluation of unused furniture at home (2.882) reveals that many villagers experience furniture being left idle, suggesting an unreasonable allocation of household resources. These findings are consistent with the results of qualitative analyses presented earlier, indicating a substantial need for improvement in the design of furniture used by villagers in Jidong.

Table 7.6 Motivations for purchasing new furniture

10. Under what circumstances would you buy furniture? (multiple choices)			
Item	Responses		Popularization Rate (n=203)
	n	Response Rate	
When building a new house or renovating a house	124	29.95%	61.08%
When the existing furniture is outdated	51	12.32%	25.12%
When the existing furniture is damaged	104	25.12%	51.23%
When furniture is on sale	33	7.97%	16.26%
When you have a child or get married	67	16.18%	33.00%
Other	35	8.45%	17.24%
When building a new house or renovating a house	414	100%	203.94%
Note: Goodness-of-fit test: $\chi 2=101.884, p=0.000$			

In terms of motivations for purchasing new furniture (Table 7.6), building a Type B house or renovating an existing one is the primary driving factor, accounting for 61.08%, followed by damage to existing furniture (51.23%). Special family events, such as weddings, also influence furniture updates, with 33% of participants indicating they would purchase new furniture. In contrast, the impact of outdated styles and store promotions on villagers' purchasing decisions is relatively minor, suggesting that there is not a high demand for furniture design updates among villagers, and promotional activities have limited appeal, reflecting a stronger emphasis on practicality and thriftiness.

Table 7.7 The internal factors influencing furniture purchases

Option	First Choice Count	Second Choice Count	Third Choice Count	Fourth Choice Count	Fifth Choice Count	Sixth Choice Count	Comprehensive Score (Mean)	Rank
Material	84	35	25	17	7	3	4.953	1
Functionality	23	66	23	18	12	18	4.100	2
Comfort	39	14	51	26	20	6	4.051	3
Environmental friendliness	33	22	15	14	22	48	3.260	4
Size	17	20	19	26	50	22	3.104	5
Design and style	7	20	20	44	28	34	2.902	6

Regarding the internal factors influencing furniture purchases (Table 7.7), material and functionality are considered the most important criteria, receiving comprehensive scores of 4.953 and 4.100, respectively, reflecting the villagers' high regard for the quality and practicality of furniture. Comfort (4.051) is also important, particularly among younger demographics. Environmental considerations (3.260) and size (3.104) received lower scores, indicating that these factors are relatively less significant in purchasing. Design and style ranked last with a score of 2.902, demonstrating that villagers place lower importance on aesthetic aspects.

Table 7.8 The external factors influencing furniture purchases

Option	First Choice Count	Second Choice Count	Third Choice Count	Fourth Choice Count	Comprehensive Score (Mean)	Rank
Price	101	37	24	10	3.331	1
Brand	40	56	28	29	2.699	2
After-sales service	46	42	54	23	2.673	3
Purchase channel	16	23	30	60	1.961	4

When ranking the importance of external factors in furniture purchasing decisions (Table 7.8), price emerges as the most significant external factor, scoring 3.331, demonstrating the substantial influence of price on villagers' purchasing decisions.

Brand (2.699) and after-sales service (2.673) are also important factors, though their influence is less than price. The score for purchasing channels was the lowest (1.961), indicating that the channel choice has relatively low significance in villagers' purchasing decisions.

Overall, villagers emphasize the quality, functionality, comfort, and price of furniture. The design principles proposed must prioritize these factors.

7.4 Analysis of Furniture Styles and Preferences

This section provides a descriptive statistical analysis and cross-analysis of questions 13 to 21. It primarily discusses respondents' preferences for furniture styles and types in bedrooms, living rooms, and kitchens, revealing tendencies in furniture selection among rural households.

7.4.1 Furniture Styles

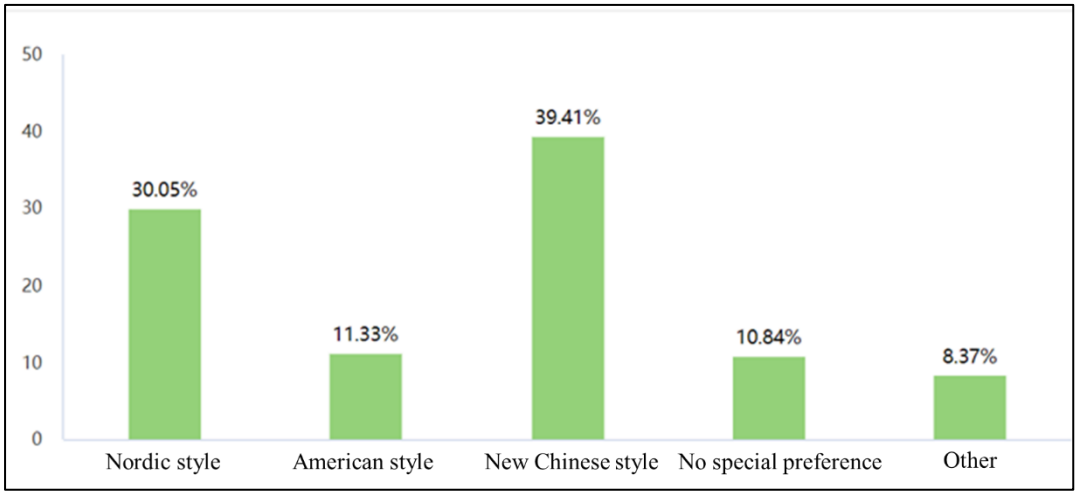


Figure 7.1 Bar chart of furniture style preferences

The survey of furniture style preferences among villagers in Jidong (Figure 7.1) shows that the New Chinese style is the most popular choice, accounting for 39.41%. This reflects the residents' recognition and acceptance of a blend of traditional culture and modern life. The Nordic style follows closely with a share of 30.05%, indicating a preference for practicality and minimalist design among villagers. In contrast, the American style occupies only 11.33%, and 10.84% of respondents indicated no particular preference. This outcome suggests that the style choices in East Hebei lean towards New Chinese and Nordic styles.

Table 7.9 Cross-analysis of furniture style preferences

Cross-analysis Results								
Title	Item	2. Age: (%)				Total	χ^2	*p*
		Under 20 years old	20-40 years old	40-60 years old	Over 60 years old			
13. Which of the following styles of furniture do you prefer?	Nordic style	14(38.89)	23(40.35)	20(20.83)	4(28.57)	61(30.05)	44.595	0.000**
	American style	5(13.89)	9(15.79)	7(7.29)	2(14.29)	23(11.33)		
	New Chinese style	11(30.56)	16(28.07)	52(54.17)	1(7.14)	80(39.41)		
	No special preference	2(5.56)	6(10.53)	13(13.54)	1(7.14)	22(10.84)		
	Other	4(11.11)	3(5.26)	4(4.17)	6(42.86)	17(8.37)		
Total		36	57	96	14	203		
* p<0.05 ** p<0.01								

Additionally, cross-analysis reveals significant differences between age groups in furniture style preferences (Table 7.10). The Nordic style is more popular among individuals under 20 and those aged 20-40, with respective preferences of 38.89% and 40.35%, indicating that younger groups favour minimalist designs. Conversely, the 40-60 age group shows a pronounced preference for the New Chinese style, reaching

54.17%, suggesting a stronger demand among adults for furniture designs that incorporate traditional elements. This result further validates the residents' inclination towards New Chinese and Nordic styles, providing valuable references for future furniture design principles.

7.4.2 Bedroom Furniture

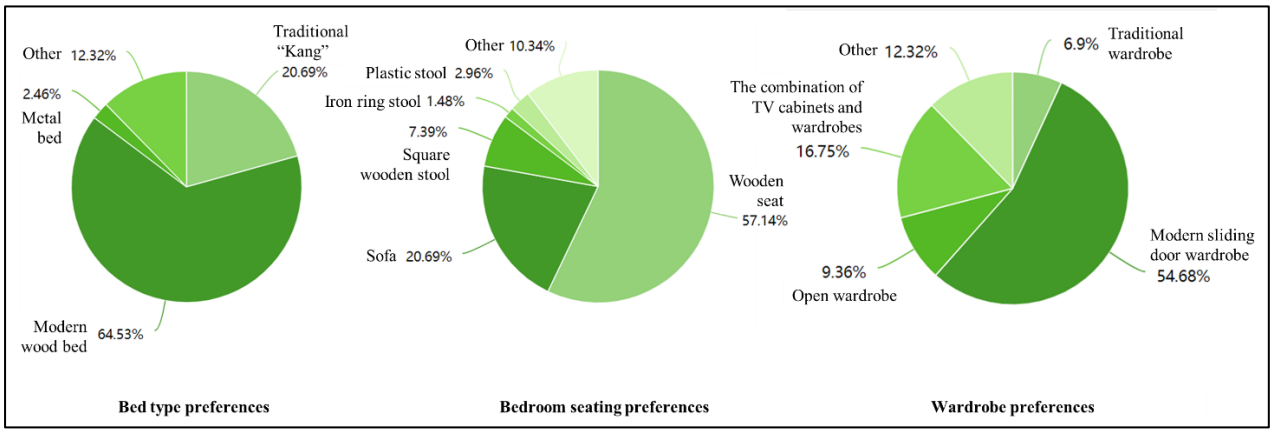


Figure 7.2 Pie chart of bedroom furniture

In the survey of bed type preferences (Figure 7.2), modern wooden beds emerged as the most favoured choice, accounting for 64.53%, reflecting residents' preference for comfort and traditional design. The traditional kang, as a regionally distinctive option, occupies 20.69%, indicating some respondents' acknowledgment of traditional living habits. In contrast, metal beds account for only 2.46%, while 12.32% of respondents selected "other" types, potentially reflecting a pursuit of individuality or special needs.

Furthermore, cross-analysis of age and bed type preferences reveals (Table 7.10) that 57.14% of respondents over 60 prefer traditional kangs. In contrast, 73.96% of those aged 40-60 prefer modern wooden beds. This indicates that the design of kangs needs to cater to seniors, modern wooden beds should be designed with adult users in mind.

The cross-analysis of household monthly income and bed type preferences also shows significant differences (Table 7.11). Specifically, among those who prefer " traditional kangs," 32.14% come from households with incomes below 5000 yuan, reflecting that economically disadvantaged families tend to favour earthen kangs. In contrast, preference for modern wooden beds reaches 76.06% in the 5000–10000-yuan income group, suggesting that households with better economic conditions are more inclined to choose modern wooden beds (with a preference of 72.22% in the 10000–15000-yuan group). Additionally, metal beds perform poorly across all income levels, accounting for only 4.26% among those unwilling to disclose their income. This indicates that in lower-income households, traditional and economical earthen kangs are more popular, while as income levels rise, modern-style beds become the choice for more families.

Table 7.10 Cross-analysis of age and bed furniture

Cross-analysis Results

Title	Item	2. Age: (%)				Total	χ^2	p
		Under 20 years old	20-40 years old	40-60 years old	Over 60 years old			
14. Which type of bed do you prefer?	Traditional “Kang”	8(22.22)	7(12.28)	19(19.79)	8(57.14)	42(20.69)	29.757	0.000**
	Modern wood bed	21(58.33)	36(63.16)	71(73.96)	3(21.43)	131(64.53)		
	Metal bed	1(2.78)	4(7.02)	0(0.00)	0(0.00)	5(2.46)		
	Other	6(16.67)	10(17.54)	6(6.25)	3(21.43)	25(12.32)		
	Total	36	57	96	14	203		
16. What type of wardrobe do you prefer?	Traditional wardrobe	3(8.33)	2(3.51)	5(5.21)	4(28.57)	14(6.90)	31.863	0.001**
	Modern sliding door wardrobe	16(44.44)	25(43.86)	66(68.75)	4(28.57)	111(54.68)		
	Open wardrobe	4(11.11)	9(15.79)	6(6.25)	0(0.00)	19(9.36)		
	TV stand and wardrobe combination	7(19.44)	13(22.81)	9(9.38)	5(35.71)	34(16.75)		
	Other	6(16.67)	8(14.04)	10(10.42)	1(7.14)	25(12.32)		
	Total	36	57	96	14	203		

* $p<0.05$ ** $p<0.01$

Table 7.11 Cross-analysis of household monthly income and bed type preferences

Cross-analysis Results									
Title	Item	6. Family's total monthly income (%)					Total	χ^2	p
		Less than 5000	5000—10000	10000—15000	15000—22000	Not convenient to discuss			
14. Which type of bed do you prefer?	Traditional "Kang"	18(32.14)	9(12.68)	4(22.22)	4(36.36)	7(14.89)	42(20.69)	32.583	0.001**
	Modern wood bed	34(60.71)	54(76.06)	13(72.22)	7(63.64)	23(48.94)	131(64.53)		
	Metal bed	1(1.79)	2(2.82)	0(0.00)	0(0.00)	2(4.26)	5(2.46)		
	Other	3(5.36)	6(8.45)	1(5.56)	0(0.00)	15(31.91)	25(12.32)		
	Total	56	71	18	11	47	203		

* $p<0.05$ ** $p<0.01$

These data show that compared with other types of beds, Jidong villagers are more satisfied with wooden beds and kangs, but they should pay attention to the needs of different groups in the later design strategy of these two kinds of furniture.

In the survey of preferences for bedroom seating (Figure 7.2), the results indicate that wooden chairs, with a preference rate of 57.14%, are the most popular choice. Sofas follow as the second most preferred option at 20.69%. In contrast, square wooden stools, iron ring stools and plastic stools account for 7.39%, 1.48% and 2.96%, respectively. These data reveal that the most popular wooden furniture needs to be modified according to the problems and needs of the bedroom seat in the previous phase.

The survey results of wardrobe type preferences (Figure 7.2) indicate that the modern sliding door wardrobe is the most favoured choice at 54.68%. The combination of TV

cabinets and wardrobes follows at 16.75%. In contrast, traditional wardrobes, open wardrobes, and other types account for 6.9%, 9.36%, and 12.32%, respectively.

Significant differences were found in the analysis of age and wardrobe type choices (Table 7.10). Among the 40-60 age group, the preference for the modern sliding door wardrobe reaches 68.75%, while this rate drops to 28.57% in the over-60 age group. In contrast, the choice for traditional wardrobes in the over-60 group is 28.57%, significantly higher than in other age groups, indicating a more pronounced preference for traditional styles among older adults.

These data indicate that middle-aged individuals are more likely to choose modern sliding-door wardrobes, while elderly individuals prefer traditional wardrobes. This conclusion aligns with the findings from earlier field observations of different types of residences. In the previous survey, the researcher noted the presence of both wardrobe styles across various households, and no significant issues or discomfort were reported during their use. Both styles meet the needs and preferences of different age groups. Therefore, no design modifications are necessary for the current wardrobes.

7.4.3 Living Room Furniture

The results of the respondents' preferences for sofa types (Figure 7.3) indicate that fabric sofas are the most popular choice, accounting for 48.77%, reflecting residents' emphasis on comfort and diverse designs. Leather and wooden sofas account for 25.12% and 18.23%, respectively, suggesting that while some residents pursue fashion and durability, they still favour traditional materials.

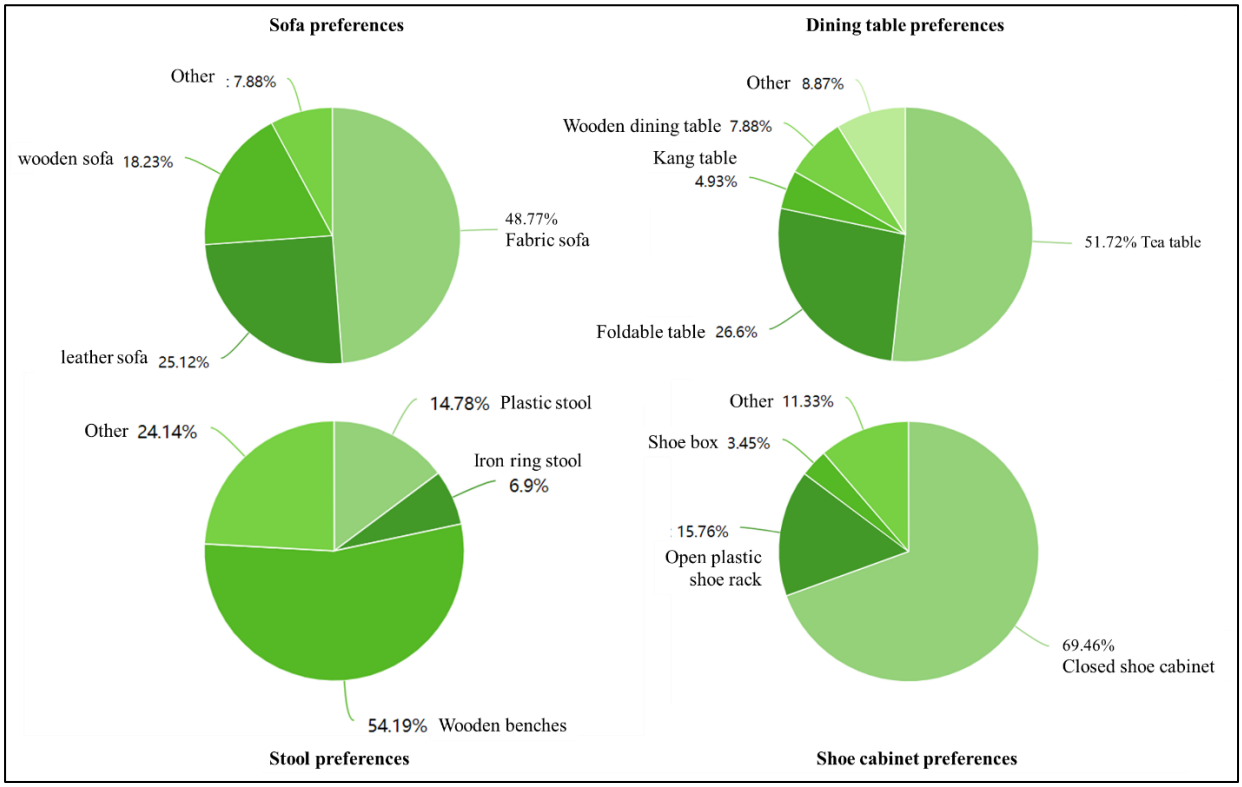


Figure 7.3 Pie chart of living room furniture

The cross-analysis reveals significant differences in the choice of sofa types (Table 7.12). Notably, among respondents under 20 and 40-60, the preference rate for fabric sofas is as high as 58.33% and 55.21%. Preference for leather sofas reaches 43.86% in the 20-40 age group, while wooden sofas are favoured in seniors' group, with a preference rate of 50.00%.

Although different age groups have different preferences for sofa materials, fabric sofas are still the most popular. This unresistant dirty material causes cleaning problems in daily life, which need to be solved in the design strategy.

Table 7.12 Cross-analysis of age and living room furniture

Cross-analysis Results

Title	Item	2. Age: (%)				Total	χ^2	p
		Under 20 years old	20-40 years old	40-60 years old	Over 60 years old			
17. What type of sofa do you prefer?	Fabric sofa	21(58.33)	23(40.35)	53(55.21)	2(14.29)	99(48.77)	36.056	0.000**
	Leather sofa	7(19.44)	25(43.86)	18(18.75)	1(7.14)	51(25.12)		
	Wooden sofa	5(13.89)	6(10.53)	19(19.79)	7(50.00)	37(18.23)		
	Other	3(8.33)	3(5.26)	6(6.25)	4(28.57)	16(7.88)		
Total		36	57	96	14	203		
18. What type of dining table do you prefer?	Tea table	14(38.89)	25(43.86)	61(63.54)	5(35.71)	105(51.72)	47.977	0.000**
	Foldable table	9(25.00)	19(33.33)	24(25.00)	2(14.29)	54(26.60)		
	Kang table	1(2.78)	0(0.00)	5(5.21)	4(28.57)	10(4.93)		
	Wooden dining table	8(22.22)	7(12.28)	1(1.04)	0(0.00)	16(7.88)		
	Other	4(11.11)	6(10.53)	5(5.21)	3(21.43)	18(8.87)		
Total		36	57	96	14	203		
19. What kind of stool do you prefer?	Plastic stool	8(22.22)	9(15.79)	11(11.46)	2(14.29)	30(14.78)	17.339	0.044*
	Iron ring stool	3(8.33)	6(10.53)	5(5.21)	0(0.00)	14(6.90)		
	Wooden benches	11(30.56)	27(47.37)	64(66.67)	8(57.14)	110(54.19)		
	Other	14(38.89)	15(26.32)	16(16.67)	4(28.57)	49(24.14)		
Total		36	57	96	14	203		
20. What type of shoe cabinet do you prefer?	Closed shoe cabinet	16(44.44)	36(63.16)	83(86.46)	6(42.86)	141(69.46)	35.399	0.000**
	Open plastic shoe rack	8(22.22)	13(22.81)	8(8.33)	3(21.43)	32(15.76)		
	Shoe box	3(8.33)	3(5.26)	0(0.00)	1(7.14)	7(3.45)		
	Other	9(25.00)	5(8.77)	5(5.21)	4(28.57)	23(11.33)		
Total		36	57	96	14	203		

* p<0.05 ** p<0.01

Table 7.13 Cross-analysis of household monthly income and living room furniture

Cross-analysis Results

Title	Item	6. Family's total monthly income (%)					Total	χ^2	p
		Less than 5000	5000— 10000	10000— 15000	15000— 22000	Not convenient to discuss			
18. What type of dining table do you prefer?	Tea table	24(42.86)	39(54.93)	14(77.78)	8(72.73)	20(42.55)	105(51.72)	31.626	0.011*
	Foldable table	15(26.79)	21(29.58)	3(16.67)	1(9.09)	14(29.79)	54(26.60)		
	Kang table	9(16.07)	0(0.00)	0(0.00)	0(0.00)	1(2.13)	10(4.93)		
	Wooden dining table	4(7.14)	5(7.04)	1(5.56)	1(9.09)	5(10.64)	16(7.88)		
	Other	4(7.14)	6(8.45)	0(0.00)	1(9.09)	7(14.89)	18(8.87)		
Total		56	71	18	11	47	203		
19. What kind of stool do you prefer?	Plastic stool	13(23.21)	10(14.08)	3(16.67)	1(9.09)	3(6.38)	30(14.78)	21.003	0.050
	Iron ring stool	2(3.57)	7(9.86)	0(0.00)	1(9.09)	4(8.51)	14(6.90)		
	Wooden benches	31(55.36)	43(60.56)	11(61.11)	5(45.45)	20(42.55)	110(54.19)		
	Other	10(17.86)	11(15.49)	4(22.22)	4(36.36)	20(42.55)	49(24.14)		
Total		56	71	18	11	47	203		

* p<0.05 ** p<0.01

Regarding the choice of dining table types (Figure 7.3), Tea tables emerge as the most popular option, accounting for 51.72%, and foldable dining tables account for 26.6%. Although there are noticeable differences in the cross-analysis (Table 7.12; Table 7.13), no matter what age group or income group, the preference for tea tables is very high. Among them, the preference for tea tables in the age group of 40-60 years old reaches 63.54%, and the preference for tea tables in the income group of 10,000-15,000 yuan reaches 77.78%.

These data show that the tea table is the most satisfactory dining table for middle-aged villagers in Jidong. As income increases, the respondents' preference for tea tables significantly strengthens. Therefore, appropriate design principles should be given

according to the problems and needs obtained from the qualitative research on the tea table.

The survey on stool preferences reveals that wooden benches (Square wooden stools) are the most popular choice, accounting for 54.19% (Figure 7.3). The cross-analysis results indicate that preference for wooden benches in the middle-aged reaches 66.67%, while it is only 30.56% among younger respondents (Table 7.12). However, compared with other types of stools, young people's preference for wooden benches, ranking third, is still high. Furthermore, there is also a notable difference in stool preferences across income levels (Table 7.13), with wooden benches being widely recognized across all income brackets, particularly in the 5000–10000-yuan group, where the preference rate reaches 60.56%. This shows that the residents of rural Jidong are more inclined to choose the durable traditional wooden stool; according to the problems found in the previous phase, it is urgent to improve the design strategy of wooden stools.

Regarding shoe cabinet preferences, closed shoe cabinets are the most popular choice at 69.46% (Figure 7.3). Although the cross-analysis results (Table 7.12) showed noticeable differences, no matter which age group, the closed shoe cabinet is the most satisfied, with the 40-60 age group's preference reaching 86.46%. This result shows the need to redesign the closed shoe cabinet according to the problems and needs of the shoe furniture drawn from the previous phase.

7.4.4 Kitchen Furniture

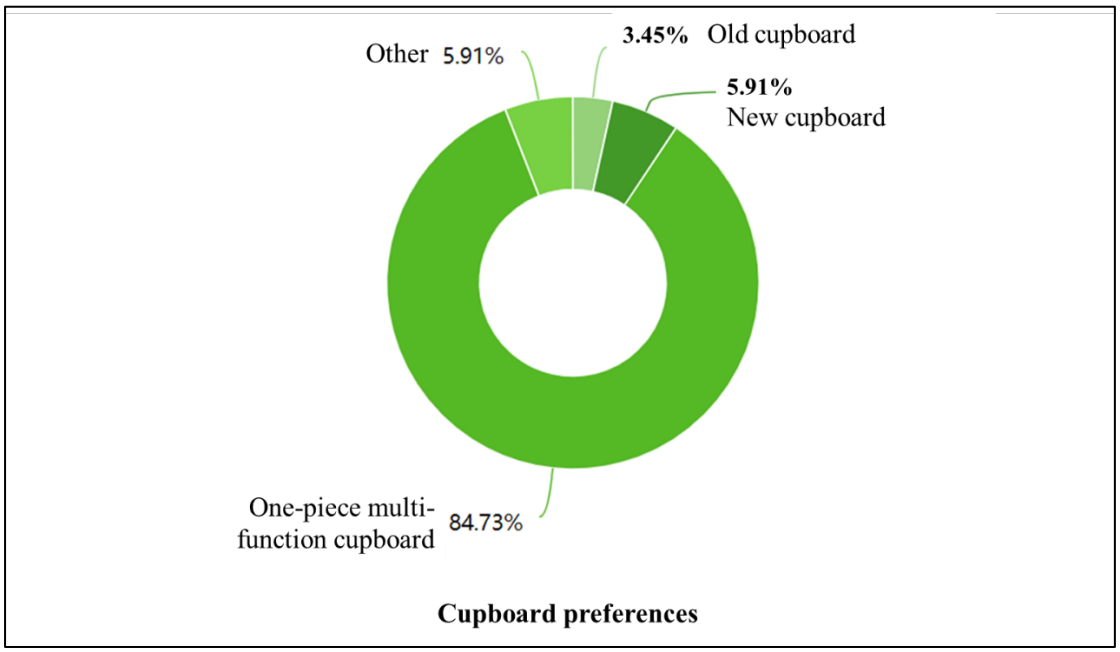


Figure 7.4 Pie chart of kitchen furniture

Table 7.14 Cross-analysis of age and kitchen furniture

Cross-analysis Results

Title	Item	2. Age: (%)				Total	χ^2	p
		Under 20 years old	20-40 years old	40-60 years old	Over 60 years old			
21. What type of cupboard do you prefer?	Old cupboard	1(2.78)	0(0.00)	3(3.13)	3(21.43)	7(3.45)		
	New cupboard	0(0.00)	1(1.75)	9(9.38)	2(14.29)	12(5.91)		
	One-piece multi-function cupboard	30(83.33)	53(92.98)	82(85.42)	7(50.00)	172(84.73)	32.992	0.000**
	Other	5(13.89)	3(5.26)	2(2.08)	2(14.29)	12(5.91)		
Total		36	57	96	14	203		

* p<0.05 ** p<0.01

The survey of respondents' preferences for cupboard types (Figure 7.4) indicates that one-piece multi-function cupboards are the most popular choice, accounting for 84.73%. In contrast, new cupboards and other types are considerably less preferred,

each at 5.91% and old cupboards account for only 3.45%. Furthermore, in the cross-analysis (Table 7.14; Table 7.15), One-piece multi-function cupboards are favoured across all age groups, particularly in the 20-40 age range, where the preference rate is as high as 92.98%. Similarly, this cupboard exhibits high selection rates across income groups, especially in the 5000–10000-yuan income group, where the preference rate reaches 94.37%. This indicates that people of different income levels and age groups prefer modern and practical cupboards to traditional ones. Therefore, the design strategy should favour modern one-piece multi-functional cupboard designs.

Table 7.15 Cross-analysis of household monthly income and kitchen furniture

Cross-analysis Results

Title	Item	6. Family's total monthly income (%)					Total	χ^2	p
		Less than 5000	5000—10000	10000—15000	15000—22000	Not convenient to discuss			
21. What type of cupboard do you prefer?	Old cupboard	5(8.93)	0(0.00)	0(0.00)	0(0.00)	2(4.26)	7(3.45)		
	New cupboard	7(12.50)	1(1.41)	1(5.56)	0(0.00)	3(6.38)	12(5.91)		
	One-piece multi-function cupboard	42(75.00)	67(94.37)	17(94.44)	10(90.91)	36(76.60)	172(84.73)	23.503	0.024*
	Other	2(3.57)	3(4.23)	0(0.00)	1(9.09)	6(12.77)	12(5.91)		
Total		56	71	18	11	47	203		

* $p<0.05$ ** $p<0.01$

7.5 Summary of Phase Five

This chapter provides a detailed analysis of the furniture preferences of rural households in Jidong. It reveals the current use of household furniture, purchasing factors, and villagers' furniture preferences in each household space.

Firstly, overall, Jidong villagers rated the currently used household furniture as average. This indicates that the existing furniture design still needs to be improved, a finding that is consistent with the results of the qualitative analysis. Secondly, respondents emphasised the need for furniture materials, functionality, price and comfort. Finally, Jidong villagers preferred simple and traditional furniture styles. For the kang, wooden beds, fabric sofas, tea tables, sitting furniture (wooden benches or square wooden stool), closed shoe cabinets and one-piece multi-function cupboards that Jidong villagers preferred, the researcher needs to make Chapter 8 design improvements based on the problems identified in the previous qualitative study.

These results complement the shortcomings of previous qualitative data and lay a foundation for formulating design principles.

8 Design Factors and Design Principles

8.1 Introduction

Based on the analysis of family space needs in different lifestyles in Chapters 5 and 6, and the study of factors influencing furniture preferences in Chapter 7, this chapter extracts and analyses the core factors of furniture design in rural Jidong in Section 8.2, and summarizes the design principles in Section 8.3.

8.2 Design Factors

In order to systematically understand the design factors of household furniture in rural Jidong, the researcher categorized and summarized furniture needs for different types of houses (Type A houses, Type B houses, village shops, mahjong halls, and processing factories) based on previous qualitative and quantitative research. Two illustrations were derived: Figure 8.1 shows the design factors for furniture in daily lifestyles, and Figure 8.2 displays the design factors for furniture in special lifestyles. Both figures show the source of the data, the furniture in question, the furniture needs and the design factors pointed to. From these two figures, it can be seen that whether in daily or special lifestyles, the furniture needs point to the following nine design factors: functionality, ergonomics, safety, materials, space optimization, aesthetic appeal, cultural and lifestyle considerations, sustainability and cost-effectiveness, and ease of maintenance. These factors form the core foundation of furniture design in rural Jidong, and the following sections provide a detailed analysis of each design factor.

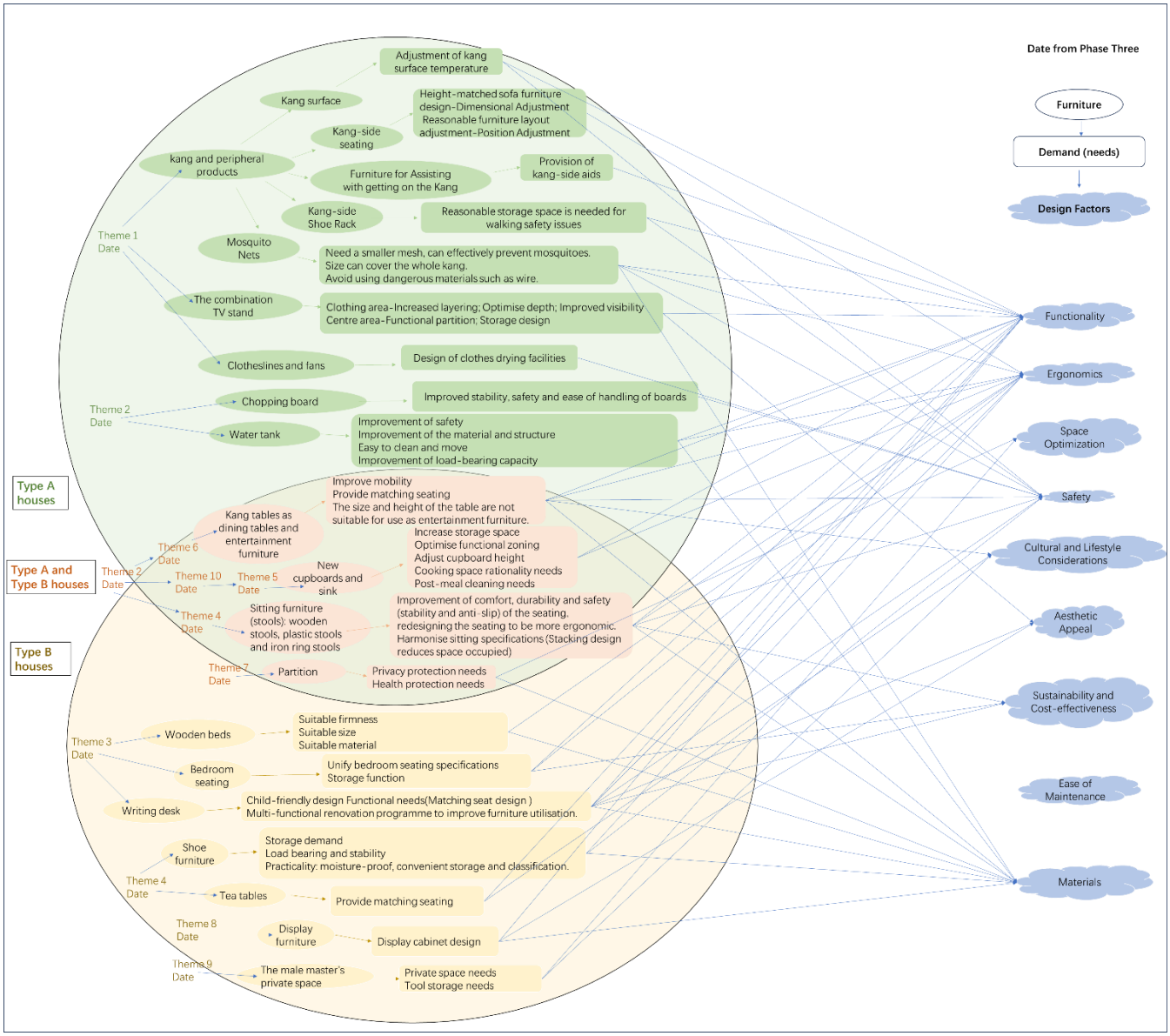


Figure 8.1 Design factors for furniture in daily lifestyles

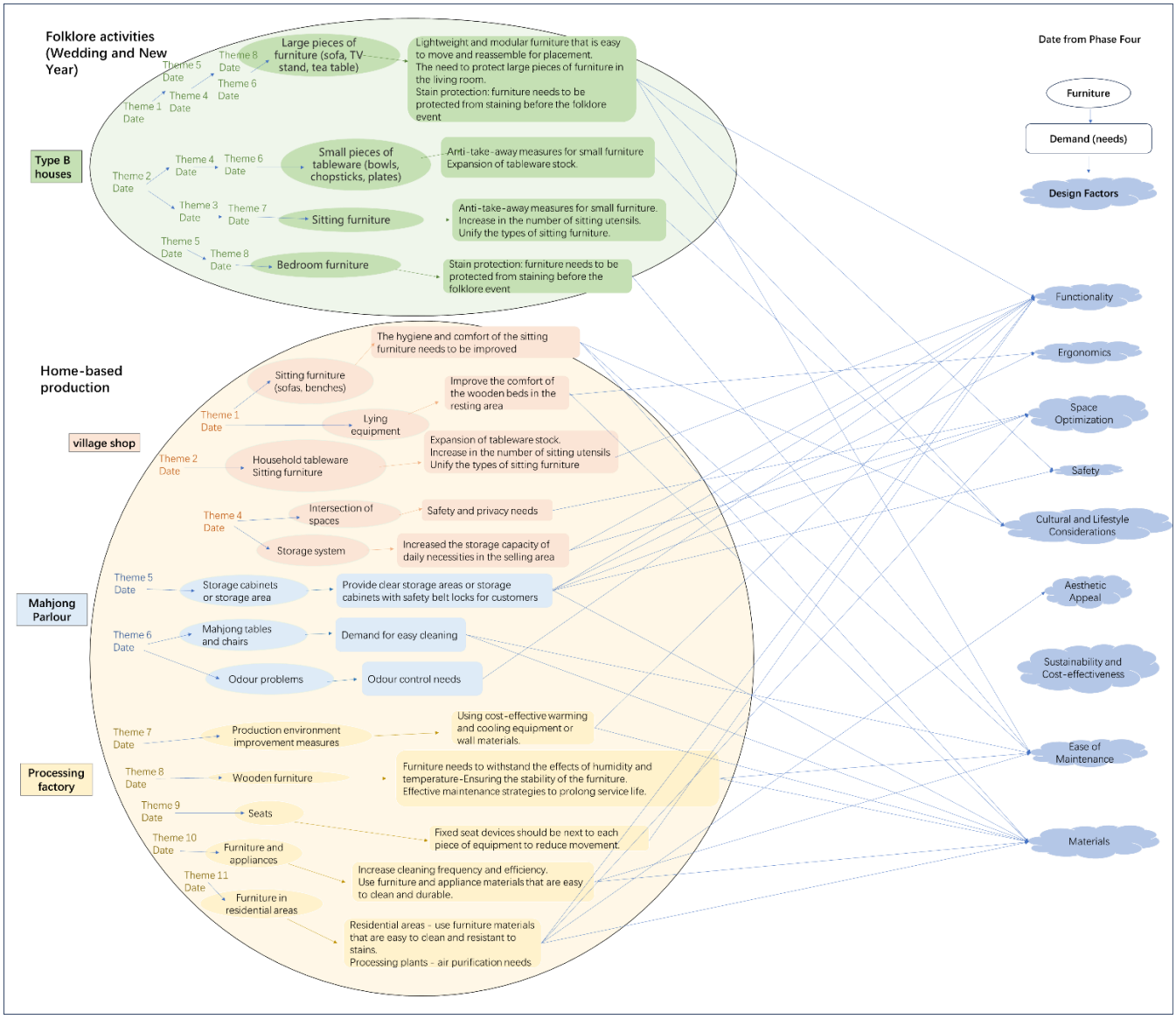


Figure 8.2 Design factors for furniture in special lifestyles

8.2.1 Functionality

The design or improvement of the functional design factors of furniture could make the family furniture in rural Jidong play a variety of roles in rural life, aiming at enhancing the practicality, comfort, usability, durability and safety of furniture. The functional design of furniture in rural Jidong includes temperature and height adjustment, storage functionality, modular design, structural design, mobility, and function-oriented design.

Firstly, in the home environment of rural Jidong, temperature regulation and height adjustment are particularly important. Temperature regulation helps to improve the comfort of the furniture, the traditional kang and the production area of processing plants need to include intelligent temperature control systems or use temperature regulation materials to ensure a comfortable rest and production environment. The height adjustment function caters to users of different heights or body types, providing a better user experience. For example, combination TV stands, matching seating for writing desks, the square wooden stool (the questionnaire shows that it is the villagers' favourite daily sitting furniture, which can be placed and used in various spaces in the home.) in rural Jidong could be designed to have adjustable heights to accommodate users of various heights. Additionally, the height adjustment of mosquito nets is critical. The design could include sliding inner tubes or telescopic frames to meet the needs of different users.

Secondly, storage functionality is another key design element aimed at improving space efficiency. Furniture design in rural Jidong should optimize space through rational storage designs to reduce clutter and make it easier for users to access items. For example, adding storage designs at the edges of traditional kang not only helps classify and store items but also reduces the risk of tripping over scattered shoes. Combination TV stands could be designed with adjustable shelves and partitioned storage racks to meet the need for storing items such as clothes. New cupboards should also consider functional zones, such as spice zones, cookware zones, and tableware zones, and use adjustable shelves and drawer systems to achieve item categorization. Furniture design for public spaces such as shops and mahjong parlours should also optimize storage functionality, with built-in storage racks or storage cabinets on wheels to increase space utilization and improve cleanliness.

Thirdly, modular design breaks furniture down into multiple independent modules or components, allowing for combination and adjustment according to user needs, thus

enhancing adaptability and flexibility. In rural Jidong, especially in the design of living room furniture in Type B houses, large pieces of furniture such as sofas, tea tables, and TV cabinets could adopt detachable modular designs. This not only facilitates adjustments to space layouts but also solves the problem of moving large pieces of furniture.

Fourthly, structural design is an essential guarantee for the stability, durability, safety, and functionality of furniture. In rural Jidong, furniture structural optimization could not be overlooked. For example, the design of mosquito nets could be changed from traditional hanging types to standalone structures supported by aluminium alloy frames, ensuring stability and ease of disassembly. Water tank designs could adopt a double-wall structure with a thickened bottom to enhance stability. Adding removable lids and sealing strips at the top could effectively prevent leakage and dirt, ensuring clean water quality. Bedroom seating designs should expand seating capacity, incorporating storage cabinet functions for greater practicality. Kang tables should include matching seating designs with adjustable backs and foldable structures to ensure stability and provide better comfort.

Fifthly, mobility in furniture design is another important functional component of furniture in rural Jidong, especially in environments where layout adjustments are frequent. For example, kang tables, water tanks, sofas, TV cabinets, bedroom seating, as well as storage cabinets in shops and mahjong parlours, could all be designed as movable furniture. By installing locking wheels at the bottom of the furniture, it becomes easier to move the furniture while ensuring stability when placed in a fixed position.

Sixthly, function-oriented design focuses on solving practical problems through reasonable design to enhance the usability and convenience of the product. For instance, designs could include footrests or lifting devices for shorter users (such as

children or the elderly) to help them easily get onto the kang. Double sink designs could be used for washing ingredients and dishes separately to improve kitchen efficiency.

In conclusion, multi-dimensional functional innovations in design could optimize the user experience and spatial efficiency of furniture in rural Jidong, while better adapting to the unique living environment and habits of the villagers.

8.2.2 Ergonomics

The application of ergonomics in furniture design for rural Jidong is crucial. A well-designed ergonomic approach not only enhances the comfort, efficiency, and safety of furniture but also better accommodates the physiological characteristics, activity needs, and usage habits of residents. The following explores the ergonomic factors in the furniture design of rural Jidong based on the demand analysis for different types of furniture, aiming to optimize the design and improve the comfort and functionality of the living environment.

Firstly, for the ergonomic design of seating, considering the height (150-175 cm) and body shape differences among the villagers of rural Jidong, as identified in the questionnaires and interviews, designers need to focus particularly on the height and comfort of chairs. For instance, in the design of seating for writing desks, the height of the chair should be adjustable, with a range of 40-55 cm, to meet the needs of users of different heights. The backrest design should follow the natural curve of the spine, providing adequate lumbar support to avoid spinal problems due to prolonged improper sitting postures.

The height of traditional kang and sofas in rural Jidong is often mismatched, which results in significant visual differences during conversations, thus affecting the

comfort of communication. According to ergonomic requirements, the seat height of sofas should be designed to range from 40-50 cm, maintaining an appropriate distance (about 2 to 2.5 meters) from the kang bed to ensure that the visual difference during conversations is controlled within 0-5 degrees, thereby improving communication comfort. The seat height of the square wooden stools and the accompanying cushions for kang tables should also consider the user's height. The seat height of square wooden stools should be designed at 35-45 cm. The thickness of the cushions for kang tables should be designed at 5-10 cm to increase the comfort of the seating.

Secondly, the design of beds also needs to consider ergonomic principles, particularly in terms of comfort and support for wooden beds. The size of wooden beds in rural Jidong is typically 200 cm × 200 cm, and the mattress design should meet ergonomic standards, using breathable natural materials such as coconut shell fibres. The mattress thickness should be 12-15 cm to provide appropriate support and improve sleep quality. Furthermore, single wooden beds placed in cash register areas of shops should also adhere to these ergonomic standards to ensure user comfort.

Thirdly, in the design of kitchen furniture, ergonomics also plays an important role. Currently, the new cupboards used in rural Jidong are relatively low (about 60 cm), requiring users to frequently bend over, making the operation inconvenient. To improve user comfort and convenience, the height of new cupboards should be adjusted to 75-80 cm, so that villagers with an average height of 150-175 cm could naturally lower their arms, with their elbows parallel to the countertop. Additionally, in Type B houses, storage space is often insufficient, so the cupboard size should be appropriately increased. A six-door cupboard with dimensions of 240 cm in length, 60 cm in width, and 75-80 cm in height could better meet storage needs. The cupboard countertop should be reasonably divided into sections for cutting, cooking, and

plating, which could reduce unnecessary movements and improve kitchen work efficiency.

The design of sinks is also an important aspect of ergonomic kitchen furniture. The double sink should be 60-80 cm in length, 40-50 cm in width, and 25-30 cm deep, which can clean large food and tableware. The design of the water tank for kitchen storage should retain the traditional cylindrical structure, with an inner diameter of 37 cm, an outer diameter of 42 cm, and a height of 50 cm, to meet the water storage needs of rural households in Jidong.

Fourthly, in addition to common furniture, the design of other special furniture pieces should also adhere to ergonomic principles. For example, the mosquito net design should be adjusted according to the size of the traditional kang in rural Jidong to ensure complete coverage and effective protection. The design dimensions of the mosquito net should be 200 cm in length, 300 cm in width, and 180 cm in height to meet the standing needs of users. The height of the shoe cabinet should be designed at 180 cm to ensure sufficient space for residents to store their shoes. In the design of storage cabinets in mahjong parlours, consideration should be given to efficient space utilization. The design should be 255 cm in length, 46 cm in width, and 180 cm in height, with 36 small compartments, each measuring 30×46×27 cm, to effectively meet the storage needs of each customer while reducing space occupation.

In conclusion, by optimizing the ergonomic design of furniture in rural Jidong, the comfort, functionality, and safety of the furniture could be significantly enhanced, while better accommodating the residents' usage needs.

8.2.3 Safety

In the furniture design for rural Jidong, safety is a crucial design factor. The goal is to protect users from potential injuries and accidents while ensuring the stability and durability of the furniture. Designers need to fully consider and optimize multiple aspects to minimize safety hazards and enhance the safety of the furniture.

Firstly, anti-slip design is an important component of furniture safety. To prevent accidents caused by sliding or instability during use, some furniture could be equipped with anti-slip features. For example, the bottom of the mosquito net frame, the seating for writing desks, the cushions for kang tables, and the legs of square wooden stools could all be fitted with durable, anti-slip rubber pads. These rubber pads increase friction with the ground, reducing the risk of falling. Additionally, considering the use of simple chopping boards on stoves, cushioning pads could be placed at the bottom of the chopping boards to lower the risk of dropping and ensure safety during the cooking process.

Secondly, a rounded corner design is significantly effective in reducing injuries. In furniture design, especially for parts that may come into contact with the body, rounded corners could effectively prevent injuries caused by sharp angles. For example, the connection points of mosquito nets, the edges of seating for writing desks, and their adjustable components could all adopt rounded corner designs to avoid injuries from sharp corners, thus enhancing the safety of the furniture.

Thirdly, in rural Jidong, furniture often needs to be moved or repositioned frequently, making safety during the moving process equally important. For example, in the living room furniture of Type B houses, large furniture is often moved during folk activities. To reduce safety risks, rubber or foam protective strips could be installed

on the four corners of sofas, tea tables, and TV cabinets. These protective strips prevent furniture from colliding with walls or other objects during movement, thus avoiding furniture damage. Additionally, the design of square wooden stools could incorporate foldable or stackable features to reduce space occupation while avoiding unnecessary tripping hazards. To address the safety issue caused by disorganized shoes near the kang, a storage device could be designed along the kang edge to ensure shoes are kept in order, preventing users from tripping over shoes inadvertently.

Fourthly, fire safety in furniture design should strictly comply with the *Code for Fire Prevention in Design of Interior Decoration of Buildings* (Ministry of Public Security of the People's Republic of China, 2018), issued by the Ministry of Public Security of the People's Republic of China, to ensure adherence to national fire prevention standards. In rural Jidong, where heating and cooking activities are frequent during winter, furniture placed near fire sources poses a significant fire hazard. To mitigate this risk, it is essential to incorporate fire-retardant materials, such as fire-resistant fabrics, flame-retardant foam, and heat-resistant plastics. In particular, bedding, cushions, and curtains used on kangs should be made from fire-retardant fabrics, while kitchen furniture, such as cupboards, should be treated with heat-resistant and fireproof coatings to enhance fire safety performance.

Fifthly, in addition to the considerations mentioned above, other specific safety hazards need to be addressed as well. For example, in rural Jidong households, the clothesline in the inner room (Type A houses) being too close to the electric fan poses a potential safety risk. To solve this, existing clotheslines could be removed, and the drying area (or movable drying equipment) could be relocated away from the electric fan. Additionally, the stability of large furniture is also a major concern. For instance, when designing shoe cabinets, wall supports or anchors could be installed to prevent the cabinet from tipping over due to uneven weight or improper placement, thereby

ensuring the safety of users. Furthermore, in specific locations like mahjong parlours, cabinets could be equipped with digital password locks to protect valuable items, enhancing security.

In conclusion, safety in the furniture design for rural Jidong requires a multi-faceted approach, addressing aspects such as anti-slip features, rounded corners, protection during furniture movement, enhanced fire resistance, and resolving specific hazards. These designs not only reduce safety risks for family members using the furniture but also improve the furniture's user experience and lifespan.

8.2.4 Materials

In the furniture design for rural Jidong, material selection is key to ensuring furniture performance, durability, and comfort. Different types of furniture require the use of appropriate materials based on their functionality and environmental characteristics to ensure that the furniture meets usage requirements and has a long service life. According to the properties and uses of the materials, this thesis classifies the materials that could be used for furniture into four main categories: synthetic and recycled materials, natural and ecological materials, metal and durable materials, and moisture-resistant and protective materials.

Firstly, the selection of synthetic and recycled materials that are durable, easy to clean, and cost-effective (recyclable or bio-based materials) for rural furniture design enhances material recycling efficiency and reduces environmental impact. For example, polyester fibre (PET) can be used for mosquito nets due to its tear resistance, breathability, and ease of cleaning, making it suitable for long-term use, and it can be recycled into recycled polyester (rPET). Polypropylene (PP) and polyethylene (PE), known for being non-toxic, durable, and comfortable, are suitable

for writing desk seating and square wooden stools and can be recycled into rPP and rPE. Polyurethane (PU) and polyvinyl chloride (PVC) coatings with low VOC emissions can be applied to sofas and mahjong table chairs, offering strong water resistance, oil resistance, and stain resistance, thereby enhancing durability and environmental sustainability. Additionally, high-density polyethylene (HDPE) is recommended for water tanks, ensuring food-grade safety while maintaining good recyclability.

To further promote material sustainability, it is recommended that village committees establish a product buyback mechanism to recycle villagers' old furniture and remanufacture or upgrade it to prolong its life cycle, improve resource utilisation, and reduce wastage. Simultaneously, the modular and detachable design should be promoted to facilitate furniture repair, component replacement, and recycling, thereby advancing the rural furniture industry toward a circular economy model.

Secondly, natural and ecological materials, known for their breathability and comfort, are essential for rural Jidong furniture. Natural coconut shell fibre is a breathable material, suitable for mattress filling in wooden beds in bedrooms or shops, providing firm support for users. The mattress cover could be made of cotton fabric, as cotton is skin-friendly and breathable, enhancing the comfort of the mattress. For the cushions of kang tables, square wooden stools, and writing desk seating, high-density memory foam or latex as filling materials could improve the comfort and support of the seating, ensuring a comfortable experience during prolonged use. In the furniture design for rural Jidong, local poplar (or solid wood) materials are widely favoured and could be used as the main material for shoe cabinets and display cabinets. These materials possess natural beauty and sturdiness, meeting the traditional style requirements of rural Jidong households.

Thirdly, metal and durable materials are primarily used in furniture that must withstand high pressure or frequent use. Aluminium alloy, iron, and thin steel plates are recommended for the design of storage cabinets in mahjong parlours and shops, as well as for furniture in processing factories. These materials offer high strength and durability, ensuring resistance to frequent use and environmental factors. Additionally, hardware components should be designed to be detachable and replaceable to improve maintenance convenience.

Fourthly, moisture-resistant and protective materials play a significant role in improving the durability of furniture, especially in humid or extreme environments. Shelves of shoe cabinets need to be made of formaldehyde-free MDF or bamboo plywood, which can effectively prevent moisture damage to furniture. For the wall materials of processing factories, composite insulation materials are used to improve the thermal insulation of the production environment, ensuring the comfort of the working environment. To extend the life of wooden furniture in processing factories and residential furniture affected by processing factories, polyurethane coatings are applied to furniture surfaces to improve their wear resistance, corrosion resistance, and water resistance, enabling the furniture to adapt to complex environments with humidity and high temperatures. For partitioning issues in Type A and Type B residences, magnetic strips or weights could be added to door curtains to enhance the effectiveness of physical partitions, making them fit more closely to the ground, thereby indirectly achieving the "partitioning" effect.

In conclusion, by selecting appropriate materials based on the functional requirements and usage environments of different furniture types, it is possible to not only improve the service life of the furniture but also enhance its comfort and aesthetic appeal.

8.2.5 Space Optimization

In the residential and commercial environments of rural Jidong, space optimization plays a crucial role in enhancing the functionality and comfort of spaces. Spatial optimization of household furniture and environment in rural Jidong can reduce spatial clutter and improve spatial cleanliness.

Firstly, foldable furniture could be folded or unfolded according to actual needs, maintaining the flexibility and adaptability of space. For example, in Type B residential kitchens and living rooms, a foldable screen could be designed as a physical partition. When not needed, it could be conveniently folded and stored, avoiding additional space occupation. Similarly, the design of foldable square wooden stools could make the space more adaptable in different scenarios, providing additional seating without occupying excessive space.

Secondly, in the residential and production-type houses of rural Jidong, effective storage solutions could organize spaces and prevent the accumulation of disordered items. For village shops and mahjong parlours, embedded storage racks and storage cabinets with casters could be considered to conveniently store items and maintain a neat and organized shop. For residential houses, especially those with limited private space, tool storage cabinets could be hidden within walls, saving space while maintaining the interior's aesthetic.

Thirdly, reasonable space partitioning could effectively improve privacy and functionality. For example, in Type B residential houses, the open design between the kitchen and living room may lead to privacy breaches and issues with oil smoke. To address this, foldable screens could be designed using transparent, easy-to-clean, oil-resistant materials. These screens ensure light transmission while effectively blocking

the spread of oil smoke. For village shops, movable partition screens could be used to separate retail areas from living areas, preventing customers from accidentally entering private spaces and enhancing privacy protection and security. For residential areas near processing factories, in order to reduce the infiltration of outdoor pollutants into the interior and maintain a clean and tidy living environment, a designated cleaning area could be designed at the entrance of the residence. This area could be equipped with shoe racks and doormats to reduce external pollution sources and maintain indoor cleanliness.

In conclusion, space optimization design in rural Jidong through foldable furniture, reasonable storage systems, and effective space partitioning strategies could significantly improve the efficiency of space use, thereby enhancing the functionality and comfort of both living and working environments.

8.2.6 Aesthetic Appeal

Aesthetic appeal not only involves the appearance of furniture but is also closely related to the atmosphere of the space, the comfort of living, and emotional connections. Through clever design, it is possible to enhance the visual attractiveness of rural Jidong furniture without compromising its functionality, thereby creating a living space that is both aesthetically pleasing and comfortable.

Firstly, appropriate materials are one of the key factors affecting the aesthetics of rural Jidong furniture. For example, in the inner room combination TV stand and living room display cabinet, transparent or semi-transparent materials for the cabinet doors not only improve the visibility of the items inside but also enhance the sense of openness and transparency of the space, making the entire space brighter and tidier. In addition, for residential furniture around processing factories, the use of dark-coloured

or richly textured materials could effectively conceal slight stains, maintaining the cleanliness of the furniture while also enhancing its durability and aesthetic appeal.

Secondly, modern lighting design is also an important means of enhancing aesthetic appeal. In display cabinets and combination TV stands, installing warm LED spotlights or concealed light strips could effectively enhance the visual effect of the displayed items. In situations with insufficient lighting, the supplemental light makes items in different areas more visible while creating a warmer and more modern atmosphere.

Thirdly, the use of colour is equally crucial in furniture design. For children's writing desks and matching seating, multiple colour and pattern options could be provided to meet children's interests and needs. In the central area of the combination TV stand, the design could incorporate colour zoning to define storage spaces. Between the living area and retail area in shops, different coloured floor tiles or wall decorations could be used to distinguish the areas. This not only helps customers quickly identify different zones but also enhances spatial layering and organization.

Fourthly, the aesthetics of furniture in rural Jidong should combine local traditional culture with modern aesthetic trends. For example, carvings or patterns with regional characteristics should be appropriately integrated into the furniture decoration, such as the unique ‘Hui’ character carved on wooden furniture. Moreover, the questionnaire shows that rural residents in Jidong have a high acceptance of New Chinese and Nordic styles of furniture, so the future furniture design can combine the characteristics of these two styles, retaining the traditional cultural flavour, but also meeting the needs of modern aesthetic simplicity.

In conclusion, the aesthetic design of rural Jidong household furniture should strike a balance between functionality and visual appeal. By carefully selecting materials, incorporating effective lighting, utilizing colour strategically, and considering regional aesthetic preferences, furniture design can significantly enhance both the beauty and liveability of rural spaces.

8.2.7 Cultural and Lifestyle Considerations

In the design of rural Jidong household furniture, cultural and lifestyle considerations are crucial. The mismatch between the traditional culture, daily habits, and lifestyle of rural Jidong residents and the traditional or current furniture often lies at the heart of furniture-related problems. Therefore, furniture improvement designs should fully respect and integrate the culture and lifestyle of rural Jidong to ensure that the designed furniture not only meets functional needs but also aligns with local traditions and habits.

Firstly, the traditional furniture currently in use in rural Jidong is not only an essential part of daily life but also a cultural symbol. In the design of improvements, it is essential to respect the traditional forms and avoid arbitrary changes to traditional dimensions and heights. For example, the kang, as an important component of traditional rural Jidong furniture, carries profound cultural significance. The design should focus on innovations in additional facilities, such as the kang surface regulation system, mosquito net designs for the kang, and the addition of armrests, footrests, and kang-side shoe cabinets. These improvements could effectively enhance functionality and comfort while preserving the core cultural value of the tradition.

Similarly, the Kang table is a common traditional dining furniture, but it is also often used as entertainment furniture. However, due to the low height of the kang table, it is

not very suitable for use as an entertainment table. In the design, it is not recommended to change its traditional size at will, but it is recommended to choose new furniture specially designed for entertainment use to replace the traditional kang table.

Secondly, in the daily lifestyle of rural Jidong residents, their habits directly influence the use of furniture. When existing furniture does not align with these habits, various problems often arise. For example, rural Jidong residents generally have the habit of squatting, whether for daily conversation or meals. This leads many to use tea tables, which are typically the same height as kang tables, as dining tables. In furniture design, it is necessary to adapt to the usage habits of rural Jidong residents rather than forcing them to change their traditional lifestyle, such as directly taking the tea table as the usual dining table and designing a matching seat.

In addition, this mismatch of usage habits often leads to the idleness of furniture, for example, the wooden table in the living room that was originally used for dining is unused. However, the thriftiness of rural Jidong residents means that unused furniture in homes is often repurposed. So, design should consider transforming furniture such as writing desks and living room tables into other usable forms to maximize the utilization of existing resources.

Thirdly, for the special lifestyle of holding folk activities at home in rural Jidong, furniture needs to be highly adaptable in terms of spatial flexibility, functionality, shareability, and safety to accommodate various usage scenarios. Traditional folk activities in rural Jidong usually require a large number of furniture pieces to host guests. This requires large furniture in the living room (such as sofas, tea tables, TV

cabinets, and refrigerators) to be highly movable and adaptable so that space can be cleared for activities.

Additionally, during festival activities in rural Jidong, the demand for furniture such as square wooden stools, tables, tableware and other furniture will increase significantly, but this furniture is not in large quantities in daily life. Therefore, the design should consider establishing a community-sharing system, allowing villagers to borrow furniture and household items when needed. This sharing system not only addresses short-term furniture needs but also improves resource utilization, reduces furniture idleness, and fosters interaction and cooperation among villagers.

Fourthly, for the special lifestyle in rural Jidong where family space is occupied for selling, entertainment, and commercial farming or animal husbandry, furniture presents unique requirements. For instance, rural Jidong shops are not only places for shopping but also spaces for socializing and resting. The comfort of seating in these shops directly affects customers' stay duration and their willingness to make purchases. Thus, seating design in shops should focus on comfort, potentially updating to more comfortable sofas or chairs to increase the time spent in the shop. Moreover, in commercial production, rural Jidong residents often move discarded furniture into production areas for use, but these discarded pieces pose safety hazards. Therefore, furniture standards for production areas should be unified to ensure both safety and durability.

In conclusion, the design of rural Jidong furniture should take into account cultural significance, lifestyle, and traditional habits. By designing furniture that aligns with the actual needs of the villagers, the quality of life can be enhanced, and the

transmission of rural culture and the continuation of traditional lifestyles can be promoted.

8.2.8 Sustainability and Cost-effectiveness

Sustainability and cost-effectiveness are core design factors in rural Jidong furniture design, aimed at promoting environmentally friendly and economically feasible design solutions to support the economic and ecological sustainability of rural households.

Firstly, to reduce environmental impact, the design should prioritize environmentally friendly materials, including recyclable, biodegradable, or locally sourced materials. For example, the natural and ecological materials (such as poplar wood and coconut fibre) and synthetic recycled materials (such as rPET, rPP, and rPE) proposed in Section 8.2.4 not only meet the functional requirements of furniture but also improve resource utilization, aligning with the principles of sustainable development. Additionally, it is recommended to establish a furniture buyback and recycling system to encourage villagers to return old furniture for remanufacturing or upgrading, which can extend furniture lifespan, reduce resource waste, and lower the cost of furniture acquisition for households.

Secondly, rural Jidong furniture design should focus on standardization to facilitate mechanized and automated production. Standardized design allows for the mass production of furniture, reducing the manufacturing and selling costs of individual products. The lower furniture sales price is more acceptable for rural families with poorer economic conditions. For example, for common seating in rural Jidong (such as wooden stools, plastic stools, and iron ring stools) and bedroom seating (wooden chairs), it is recommended to unify specifications, carry out large-scale production

and sales, increase the supply of furniture, and solve the situation of insufficient furniture in Jidong villagers. For production seating equipment in processing factories, standardization is also necessary. It could be designed as fixed, shared, and height-adjustable seats to improve work efficiency.

Thirdly, for economically disadvantaged rural Jidong households, the design should prioritize low-cost and effective improvements. For instance, adding thermal insulation kang boards on the kang surface instead of the intelligent temperature control system mentioned earlier. The hollow design of the kang board makes it have a certain distance from the kang, which can also effectively isolate the heat of the kang body from direct contact with the skin while maintaining a comfortable surface temperature for a long time. For families without children, writing desks could be transformed into TV cabinets, dressing tables, or tool storage cabinets to improve the multifunctionality and usability of furniture. For shops that could not design new seating, removable cushion covers could be customized for existing sofas to facilitate regular cleaning and replacement, thereby extending the furniture's lifespan. For processing factories where wooden furniture could not be replaced, systematic maintenance measures could be taken, such as applying wear-resistant and corrosion-resistant coatings to extend its service life and ensure safety in complex work environments.

In conclusion, by choosing environmentally friendly materials, promoting standardized production, and implementing cost-effective improvements, rural Jidong furniture design could balance sustainability and cost-effectiveness, helping to improve household living environments and support the sustainable development of the rural economy and ecology.

8.2.9 Ease of Maintenance

Ease of maintenance is an important consideration in rural Jidong furniture design, aimed at reducing the complexity of daily maintenance for villagers and extending the furniture's lifespan through the design of removable components, surface protection, and environmental adaptability.

Firstly, when designing furniture, considering the convenience of daily cleaning and maintenance, the use of removable components could significantly reduce cleaning difficulty and extend the furniture's service life. For example, the cushion cover of the sofa in the shop, the backrests, armrests, and seat cushions of children's writing desks can be designed as removable, convenient for users to remove and clean regularly, and keep the furniture clean and sanitary.

Secondly, to reduce the accumulation of stains and damage on furniture surfaces, using waterproof, oil-resistant, and stain-resistant surface treatments or designing protective covers is an effective solution. For example, before the folk event, oil-resistant covers could be provided for shop sofas, living room furniture, and bedroom furniture to protect the furniture from food contamination and stains. For high-pollution environments, for furniture and equipment in processing factories, applying waterproof, oil-resistant, and stain-resistant coatings (such as PTFE coatings) or using dust-proof and oil-proof outer shell designs could effectively reduce the accumulation of dust, grease, and other substances. Antifouling material tablecloths can also be designed for mahjong tables in mahjong parlours to reduce cleaning difficulty.

Thirdly, based on the needs of different usage environments, furniture design should be highly adaptable and incorporate regular maintenance measures to ensure the functionality and safety of furniture in various environments. For example, designing

a splash-proof sink for kitchens in rural Jidong type B houses could effectively avoid the secondary pollution of water stains. For high-frequency use areas such as mahjong parlours, ventilation systems and fans could be added to maintain airflow. In residential areas around processing factories, high-efficiency air purifiers could be installed, especially in key areas such as the living room and bedroom, to reduce the impact of external pollution on the indoor environment. Additionally, in the design of wooden furniture for processing factories, regular checks and updates of protective coatings could effectively ensure the long-term use of furniture, while improving the overall safety and comfort of the work environment.

These easy-to-maintain designs, could enhance the long-term efficiency of furniture use and the furniture's lifespan could be extended.

8.3 Design Principles

This section presents the following design principles based on a detailed analysis of the factors influencing furniture design in rural Jidong.

Human-Centred Design Principle:

Rural Jidong furniture design should be human-centred, fully considering the physical characteristics, living habits, and usage needs of the local villagers to ensure the comfort and convenience of every user. The design should adhere to ergonomic principles, taking into account the needs of users across different age groups and body types, ensuring that the size, form, and functionality of the furniture are adaptable to a variety of usage scenarios. Additionally, furniture design should respect and inherit the local cultural characteristics, combined with the regional characteristics of Jidong

rural areas, avoid excessive modernization, so that furniture should become the medium of rural cultural expression in Jidong.

Principle of Balancing Functionality and Aesthetics:

Furniture design in rural Jidong should adhere to the principle of balancing functionality and aesthetics, aiming to harmonize practicality with visual appeal to meet diverse living needs. Functional design should focus on temperature regulation, height adjustment, modular design and storage functions to meet the changing needs of various living environments (home, shop, production area) to improve the comfort and versatility of furniture. Moreover, the design should maximize space utilization, and incorporate foldable, stackable, or modular furniture to improve spatial efficiency and flexibility. From an aesthetic perspective, the design should incorporate styles, colours, and textures that align with the preferences of rural Jidong residents to enhance visual appeal and create a comfortable, aesthetically pleasing living environment.

Economic Sustainability Principle:

The furniture design for rural Jidong should focus on sustainability and cost-effectiveness, prioritizing the use of environmentally friendly, low-cost materials while emphasizing functionality and durability. The design should opt for recyclable, or locally sourced natural materials to minimize environmental impact and align with sustainable development goals. Furthermore, standardized design should be a key focus to facilitate mechanized and automated production, thereby reducing manufacturing and sales costs, and making the furniture more affordable and suitable for the lower economic levels of rural Jidong.

Principle of Ease of Maintenance and Safety:

Furniture design in rural Jidong should consider both ease of maintenance and safety to enhance the longevity of furniture and the safety of the living environment. The design should incorporate removable components, protective coatings (waterproof, moisture-resistant, and stain-resistant), and environmental adaptability to reduce the difficulty of daily cleaning for rural residents, thus extending the lifespan of the furniture. Furthermore, the design should address safety concerns by ensuring stability and durability, such as through anti-slip features, rounded corners, and protective measures for movable furniture to reduce safety hazards and prevent accidents.

These design principles will provide core guidance for the furniture design in rural Jidong, helping to achieve efficient and sustainable design solutions.

8.4 Summary

This chapter, by analysing and summarizing the design factors and principles (Figure 8.3), facilitates the creation of home furniture with strong functionality, safety, adaptability, and cultural relevance, while also bringing cost-effectiveness and sustainability to the rural environment. It lays the foundation for the future design and production of rural Jidong furniture.

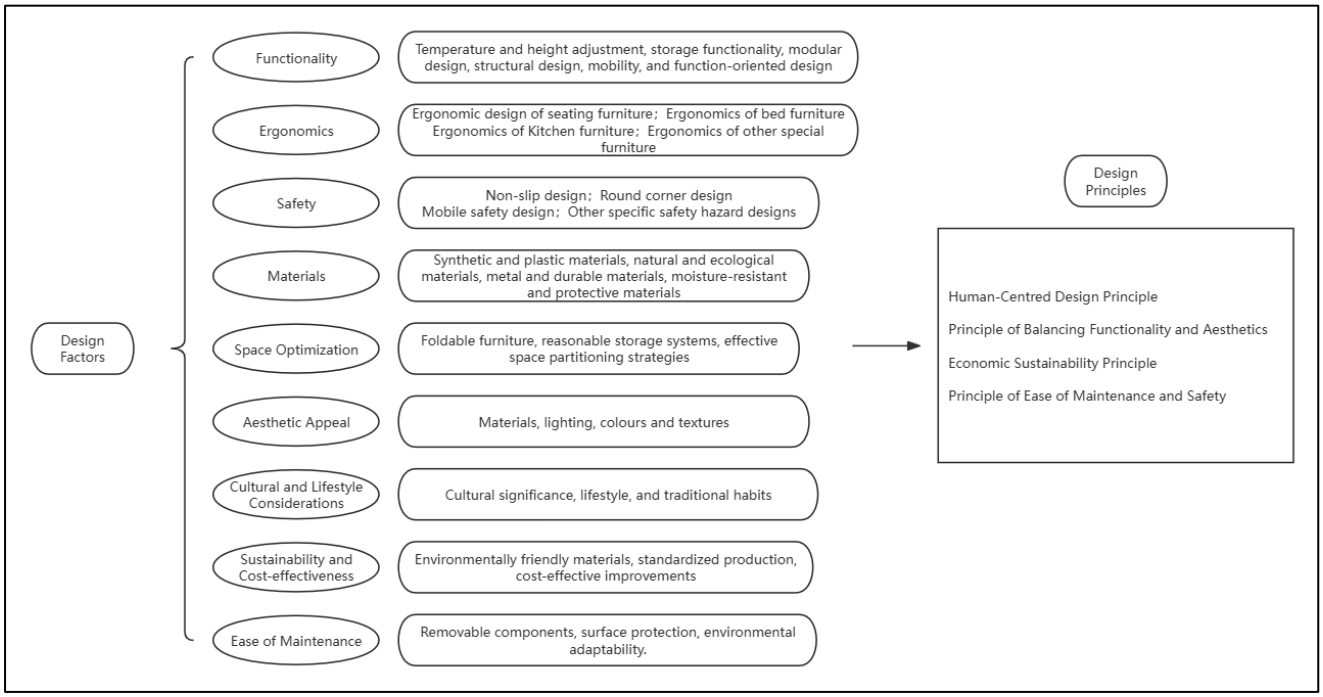


Figure 8.3 Design factors and design principles

9 Discussion and Conclusion

9.1 Introduction

This chapter aims to discuss the primary findings of this research and relate them to the existing literature, establishing the core distinctions and contributions of this research. The unique aspect of this research lies in its adoption of a mixed-method approach in anthropological ethnographic fieldwork to conduct an in-depth exploration of the current state of rural household furniture in Jidong. First, the research documented the existence and usage of certain traditional rural furniture, contributing to the preservation of cultural heritage and providing a foundation for its continued transmission. Second, utilizing lifestyle theory, it identified specific issues associated with currently used furniture and proposed design principles to address these challenges, thereby providing theoretical support for the improvement and design of rural furniture in Jidong.

Sections 9.2, 9.3, and 9.4 examine the relationship between the research findings and the research questions and objectives. This research also compares the research results with the literature on furniture in other rural regional and Jidong rural areas. Section 9.5 discusses the theoretical and practical implications of this research. Finally, Section 9.6 analyses the study's limitations and outlines directions for future research, offering insights and suggestions for subsequent investigations.

9.2 Research Question One

To address research question one (What traditional furniture was discovered in the villages surveyed?), the second phase of fieldwork was conducted in four rural Jidong villages. This phase was specifically designed to systematically document traditional

furniture by employing open-ended interviews as the primary method, complemented by direct observation approaches. Through detailed analysis of traditional furniture in local homes, this study examined multiple dimensions, including size, usage, decorative features, and manufacturing techniques, while also exploring their cultural significance. The findings are summarized in Section 4.6 of the thesis. By organizing and documenting traditional furniture in the study area, this research contributes to filling a part of the gaps in traditional furniture data in rural Jidong, successfully achieving Objective One.

9.3 Research Question Two

To explore the research question two (What problems and needs do rural residents have regarding household furniture in the context of the lifestyle of eastern Hebei rural households?), the first half of the first phase of fieldwork involved an investigation and data collection on the contextual background of Jidong rural lifestyle, which is discussed in detail in Sections 4.2 of the thesis.

Building upon this foundation, the second half of the first phase and second phase of fieldwork involved a photographic analysis of yards, houses, and furniture. Chapters 4.3 and 4.5 specifically examine the types and layouts of currently used furniture in different yards and houses. This thesis divides the yards and houses in Jidong into three categories: pre-earthquake yards and houses, residential yards and houses, and production-type yards and houses. Among these, the pre-earthquake yards and residential yards are included in the eleven types of Jidong rural yards proposed by Wang *et al.* (1962). At present, the most prevalent yard layouts in rural Jidong are Type A and Type B yards in residential yards. This research provides a detailed introduction and analysis of the types and layouts of currently used furniture in the Type A houses of Type A yards and Type B houses of Type B yards.

Regarding pre-earthquake yards, although their overall number is minimal, some of the traditional furniture remaining within them holds certain collectable value. This research summarizes this type of furniture to answer research question one. Furthermore, a new category of functional-type yards was introduced in this research. It is a product of the changes in Jidong's rural lifestyle with the development of the times, and a new discovery made by the researcher through fieldwork. This research classifies and arranges the types and layouts of furniture currently used in the production area.

Secondly, integrating the findings from the first two phases, the third phase conducted fieldwork guided by lifestyle theory. Chapters 5, 6, and 7 of thesis employ a mixed-methods approach, incorporating interviews, observations, field diaries, and questionnaires capturing both participants and researcher perspectives. These methods integrate qualitative and quantitative analyses to provide a comprehensive understanding of the study's findings. These chapters delve into the issues, demands, and preferences associated with currently used furniture in daily and special lifestyles. This research addresses the limitations of prior research, such as Shao (2013) and Zheng (2019), which focused only on the modification of individual household furniture and lacked a comprehensive analysis of issues and demands for furniture in various home spaces in rural Jidong. Drawing on the fieldwork methods of scholars like Wang Tong (2010), Zhang Chong (2005), and Zhang Yachi (2007), who studied rural household furniture in other regions of China, this research, based on their methods, adds the dual perspectives of respondents and observers to collects multiple data of qualitative and quantitative data. Through in-depth analysis, this research successfully establishes a comprehensive archive of the current furniture needs of rural households in Jidong, achieving the second research objective. This outcome provides significant data support and theoretical foundations for future research on furniture design in rural Jidong.

9.4 Research Question Three

In order to answer research question 3 (What improvement principles can be proposed for the design and usage of furniture in rural households of eastern Hebei, considering their current lifestyle?), Chapter 8 of this thesis proposes specific principles for the furniture currently in use. Unlike previous studies (Shao, 2013; Zheng, 2019), which focused only on isolated furniture improvements, this research presents a holistic approach by systematically analysing furniture use across different household spaces and lifestyles. In contrast, through fieldwork, this research comprehensively sorted out the problems encountered by rural families in the use of household furniture in different family spaces and lifestyles in the Jidong area. Chapter 8 presents design principles for each piece of furniture, with some furniture even accompanied by detailed design plans, following the writing methods of Engler *et al.* (2009). The proposed design strategy also successfully fulfilled the third objective of this research.

9.5 Contribution to Knowledge

The original contribution to knowledge presented in this research is multifaceted, grounded in its unique methodological approach, comprehensive data collection, and the innovative application of lifestyle theory to the study of rural household furniture in Jidong. This approach differs from the traditional mixed research methods of combining quantitative and qualitative data used by scholars such as Sun (2014), Wang Tong (2020), and Li (2015), and also from the purely qualitative ethnographic methods employed by Wang (2017). This research not only fills existing gaps in the documentation and analysis of traditional rural furniture but also proposes practical design principles for improving the functionality and cultural relevance of contemporary furniture in rural eastern Hebei.

A key contribution of this research lies in its adoption of a mixed-methods approach within anthropological ethnographic fieldwork. By integrating qualitative methods such as open-ended interviews, participatory observations, field diaries, and photographic analyses with quantitative data from structured questionnaires, the research achieves a holistic understanding of the subject matter. This methodological framework allowed for an in-depth exploration of both the historical context and the present-day realities of rural household furniture, setting this research apart from previous research that predominantly relied on singular methodological perspectives.

The systematic documentation of traditional rural furniture discovered during fieldwork represents another significant contribution. The identification and analysis of nine distinct types of traditional furniture, categorized by dimensions such as size, usage, decorative features, and manufacturing techniques, address the lack of comprehensive data in this area. This archival effort not only preserves valuable cultural heritage but also provides a foundational database for future comparative studies and design innovations.

In addition, Jin (2010), Li (2015), and Wang et al. (2023) have studied rural furniture in other areas of China using lifestyle theory. The application of lifestyle theory to understand the problems and needs of rural residents concerning household furniture introduces a novel analytical lens. By examining how changes in lifestyle influence furniture usage and preferences, the study offers critical insights into the evolving domestic environments of rural Jidong. This approach surpasses the limitations of earlier studies, which often focused narrowly on individual furniture pieces without considering broader socio-cultural dynamics. The study fully demonstrates the applicability of lifestyle theory in analysing the problems and needs of rural furniture in specific regions of China, providing new empirical support for the broader application of this theory.

Another original contribution is the classification and detailed analysis of furniture layouts in various yard types, including pre-earthquake yards, residential yards, and the newly identified functional-type yards. The introduction of functional-type yards, a concept emerging from fieldwork observations, highlights the adaptive responses of rural architecture and furniture arrangements to socio-economic changes. This new category of yard was identified during the fieldwork and is included in the research as it marks a change to traditional rural life in Jidong.

Moreover, the study's practical contributions are evident in the design principles proposed for improving rural household furniture. Unlike previous research that offered generic recommendations, this research presents specific improvement measures for different furniture types. These principles are informed by empirical data and tailored to the actual needs and preferences of rural residents, ensuring their relevance and applicability.

In summary, this research makes original contributions to knowledge through its methodological innovations, comprehensive documentation of traditional furniture, application of lifestyle theory, introduction of new yard classifications, and the development of targeted furniture design principles. These contributions not only advance academic understanding of rural household furniture in Jidong but also offer practical solutions for enhancing the living conditions of rural communities.

9.6 Directions for Further Research

The primary objective of this dissertation is to analyse the current household furniture (currently used furniture and traditional furniture) in rural Jidong. However, there

remain three aspects that were not fully addressed, offering opportunities for further exploration in future research.

First, while this thesis primarily concentrates on identifying issues associated with currently used furniture and proposing design principles for improvement, the selection of respondents and the observational focus were predominantly centred on the daily lives and furniture usage patterns of female household members. Due to gender-related limitations of the researcher, an in-depth examination of the daily routines and specific furniture-related needs of male household members—particularly concerning rest —was not feasible. Nevertheless, the roles of men within the household and their associated furniture requirements are equally significant. Therefore, future research should expand the scope of investigation to include a more comprehensive analysis of male household members' living environments and furniture needs, thereby strengthening the theoretical foundation for the design of rural Jidong household furniture.

Secondly, regarding the study of traditional furniture, this thesis organises the types of traditional furniture found in four fieldwork villages. However, the Jidong region is vast, and different villages may exhibit varying cultural, economic, and lifestyle characteristics, which could result in differences in the types and uses of traditional furniture. The study based on just four villages is evidently insufficient to comprehensively reflect the state of traditional furniture across the entire Jidong. Thus, future research should expand to include more Jidong villages, conducting in-depth investigations into the regional characteristics of traditional furniture.

Finally, although participant observation was a primary methodological approach in this study, necessary adjustments were made to shorten observation periods to respect

cultural norms within the study population. This limited the depth of the collected data, and these limitations are acknowledged as potential gaps. Therefore, future research could enhance data richness by extending or repeating field visits, ensuring a more comprehensive understanding of household furniture usage in rural Jidong.

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Appendices

Appendix 1: Literature Review Collation

Title, author(s) and year	Research Methods, Findings, and Evaluation
'Exploration of modern rural furniture design strategies from the perspective of value rationality', Guo, C. and Tang, L. H. (2023).	Grasp the real needs of rural villagers and return to the design of daily life.
'Chapter 9: Basic Issues in Contemporary Rural Furniture Design in China', Nong, X.W. (2022)	The fundamental issues in rural furniture design The concept of rural furniture It is believed that rural household furniture design needs to embody cultural significance, economic feasibility, and practicality.
Research on the Design of New Rural Living Room Furniture Based on Lifestyle, Jin, J. (2010).	Qualitative Research Establish a model framework for studying the lifestyle of new rural areas and the design of living room furniture in new rural areas. Analyse the trends in lifestyle changes in Zhejiang's new rural areas and the design of living room furniture in Zhejiang's new rural areas. Develop living room furniture products for new rural areas based on general furniture design processes, applying theory to practice.
'Research on Rural Living Room Furniture Design Based on Lifestyle', Wang, S.Y. and Tang, L.H (2023)	In rural living habits: Residential space, storage behaviour, and hygiene practices create specific demands for rural living room furniture. In rural social habits: Social customs, consumption behaviour, and aesthetic characteristics shape the requirements for rural living room furniture. Design Strategies Based on Needs: Market positioning strategy; Cultural adaptation strategy; Local material sourcing strategy; Environmental adaptation strategy (for family space). Shortcoming: The process of data collection and data analysis is not described in detail.
Research on the Design of New Rural Residential Layouts Based on Production and Lifestyle, Li, F.C. (2015)	Field investigation method, Literature research method (case analysis method, multidisciplinary cross-research, inductive summarization method) Summarize the types of rural industries and home-based production methods in rural Chengdu. Categorize rural lifestyles based on the content of rural living activities in Chengdu.

	Identify the evolution patterns of housing layouts under the transformation of production and living models in the suburban areas of Chengdu. Summarize the different influencing factors of production and lifestyle on the layouts of new rural housing. Develop design strategies and an evaluation index system for new rural housing layouts in suburban Chengdu, based on the perspective of production and lifestyle.
Research on Furniture Design for Rural Residents in Central Hunan, Yan, Z.H. (2012).	Fieldwork, Literature analysis method (questionnaires, interviews, and photography) Investigated the natural environment, living conditions, labour methods, leisure lifestyles, consumption patterns, living customs, and furniture preferences of rural residents in central Hunan. Explored the shape, structure, functionality, materials, colours, and surface decorations of rural furniture in central Hunan. Extracted furniture design characteristics suitable for the rural areas of central Hunan.
Research on Folk Furniture in Shanxi, Zhang Chong (2005).	Field investigation method, Literature research method (comparative analysis) Study Topics: Background and Environment of Shanxi Folk Furniture: examined the historical and environmental context in which Shanxi folk furniture emerged. Comprehensive Discussion on Ming and Qing Dynasty Shanxi Folk Furniture: Analysed the furniture from multiple aspects, including history, types, materials, shapes, structures, craftsmanship, and decorations; Clarified the era's background, social features, and furniture usage. Analysis of Modern Shanxi Folk Furniture: Focused on aspects such as wood materials, shapes, structures, and decorative elements. Compared the characteristics of Shanxi folk furniture from the Ming and Qing periods with modern examples.
Research on Folk Furniture in Southern Anhui, Zhang Yachi (2007).	Field Investigation Method, Case Study Method, Literature Research Method (Comparative Analysis) Summarize and analyse the formation and development, layout, types and characteristics, stylistic and cultural features, artistic qualities, structure,

	materials, and craftsmanship of Anhui Southern folk furniture. Conduct a horizontal comparative study between the folk furniture of Anhui Southern ancient residences and other types of traditional Chinese furniture, such as Shanxi ancient residential furniture and palace furniture. Focus on analysing the characteristics and design elements of the furniture, further highlighting the unique features and patterns of Anhui Southern folk furniture through comparison.
Research on the inheritance of folk furniture in Party Family Village, Shaanxi, Sun, G. R. (2014).	Field Investigation Method Study the folk furniture of Party Family Village (Shaanxi), including the overall characteristics of furniture layout, types, shapes, decorations, materials, structure and craftsmanship, artistic style, and the cultural factors influencing the formation of Party Family Village furniture. Research furniture decoration, including decoration themes, locations, techniques, and summarize its decorative characteristics. Analyse the factors influencing the decoration of folk furniture in Shaanxi villages. Construct a system for the inheritance of folk furniture traditions.
Self-Sufficient Furniture Design for Farmers in Rural China for Contemporary Living, Wang, C. I., & Laughton, S. (2017).	Ethnography (Immersive Fieldwork Research) Taking Shijiazhuang in the Hebei region as an example, furniture design is integrated with the local traditional rural culture. Use the New Technique - Tapered Tenon Joinery System
Design of kitchen furniture in rural Yuncheng based on lifestyle, Wang Tong (2020).	Literature Research Method; Combination of Qualitative and Quantitative Methods (Questionnaire, Interview, Inductive Method, Statistical Analysis, Participant Observation, Non-Participant Observation) Conduct theoretical research on lifestyle and rural kitchens, establishing a model for studying rural lifestyles in the Yuncheng region and conducting research based on this model. Analyse the lifestyle characteristics and kitchen-living demands of Yuncheng rural residents, summarizing the design elements and principles for rural kitchen furniture in the region. Develop a design model for rural kitchen furniture in Yuncheng. Complete multiple rural kitchen furniture design proposals for Yuncheng, and evaluate these proposals using the Value Opportunity Analysis (VOA) tool. Select the most reasonable proposal for modification, finalize the model, and validate its application.

Research on energy-saving transformation strategies for rural houses in eastern Hebei based on thermal comfort, Shao, S.Y. (2023).	Literature Research Method; Questionnaire Survey Method The author believes that the spatial structure of houses in the Jidong region significantly influences the daily behaviour of rural households. From the perspective of indoor thermal comfort, the entire spatial layout of Jidong rural houses was remodelled. Shortcoming: Although the renovation improved spatial clarity and privacy, the overall space leaned more toward urban living styles, failing to adapt well to the unique lifestyles and behavioural patterns of rural residents.
Design aesthetics of rural residences in the Jidong region, Zhang, X.C. (2020)	Field Investigation: Using firsthand data from field research, analysed aspects of Jidong rural houses such as building materials, overall form, interior spaces, decorative arts, and residential customs to investigate the characteristics of Jidong rural architecture. Summarized the unique architectural aesthetics of Jidong rural houses.
Research on the residential morphology of coastal villages in Jidong, Wang, F. (2018).	Field Investigation: Conducted in-depth research, visits, and actual measurements of traditional residences in regions of Qinhuangdao, Tangshan, and Cangzhou. Gained insights into the living and production conditions of local residents, exploring the material spatial types and cultural features of traditional residences. Briefly mentioned Jidong traditional furniture.
Several issues in the design of rural residences in Tangshan, Wang, T.H. and Yu, B.X. (1962).	Investigated yard and residential area layouts in Tangshan.
Research on the arrangement of living spaces in Tangshan rural residences based on the traditional kang and stove heating system, Yan, S.R. and Wang, S.S. (2018).	Proposed modifications to kang furniture, reflecting the construction capabilities and housing layouts specific to Tangshan rural areas.

Appendix 2: PG2-Ethical Approval Form

Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

PG2 / E1 FORM

APPLICATION FOR ETHICAL APPROVAL

In order for research to result in benefit and minimise risk of harm, it must be conducted ethically. A researcher may not be covered by the University's insurance if ethical approval has not been obtained prior to commencement.

The University follows the OECD Frascati manual definition of **research activity**: "creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications". As such this covers activities undertaken by members of staff, postgraduate research students, and both taught postgraduate and undergraduate students working on dissertations/projects.

The individual undertaking the research activity is known as the "principal researcher".

Ethical approval is not required for routine audits, performance reviews, quality assurance studies, testing within normal educational requirements, and literary or artistic criticism.

Please read the notes for guidance before completing ALL sections of the form.

This form must be completed and approved prior to undertaking any research activity. Please see Checklist for details of process for different categories of application.

SECTION A: About You (Principal Researcher)

1	Full Name:		CHEN BINGLU			
2	Tick all boxes that apply:		Member of staff:	☐	Honorary research fellow:	☐
	Undergraduate Student	☐	Taught Postgraduate Student	☐	Postgraduate Research Student	☒

3	Institute/Academic Discipline/Centre:	Art & Design
4	Campus:	Swansea
5	E-mail address:	2105344@student.uwtsd.ac.uk
6	Contact Telephone Number:	008613171508272
	For students:	
7	Student Number:	2105344
8	Programme of Study:	Professional Doctorate Art & Design
9	Director of Studies/Supervisor:	Yajie Zhang/Ian Walsh

SECTION B: Approval for Research Activity

1	Has the research activity received approval in principle? (please check the Guidance Notes as to the appropriate approval process for different levels of research by different categories of individual)		**YES**	☒	**NO**	☐
					Date	
2	If Yes, please indicate source of approval (and date where known): ***Approval in principle must be obtained from the relevant source prior to seeking ethical approval***	Research Degrees Committee		☒	2023.04.13	
		Institute Research Committee		☐		
				☐		

SECTION C: Internal and External Ethical Guidance Materials

	Please list the core ethical guidance documents that have been referred to during the completion of this form (including any discipline-specific codes of research ethics, location-specific codes of research ethics, and also any specific ethical guidance relating to the proposed methodology). Please tick to confirm that your research proposal adheres to these codes and guidelines. You may add rows to this table if needed.	
1	**UWTSD Research Ethics & Integrity Code of Practice**	☒
2	**UWTSD Research Data Management Policy**	☒
3		☐

SECTION D: External Collaborative Research Activity
If there are external collaborators then you should gain consent from the contact persons to share their personal data with the university. If there are no external collaborators then leave this section blank and continue to section E.

1	Institution					
2	Contact person name					
3	Contact person e-mail address					
4	Is your research externally funded?		**YES**	☐	**NO**	☐
5	Are you in receipt of a KESS scholarship?		**YES**	☐	**NO**	☐
6	Are you specifically employed to undertake this research in either a paid or voluntary capacity?	Voluntary	**YES**	☐	**NO**	☐
7		Employed	**YES**	☐	**NO**	☐
8	Is the research being undertaken within an existing UWTSD Athrofa Professional Learning Partnership (APLP)?	If YES then the permission question below does not need to be answered.	**YES**	☐	**NO**	☐
9	Has permission to undertake the research has been provided by the partner organisation?	(If YES attach copy) If NO the application cannot continue	**YES**	☐	**NO**	☐

Where research activity is carried out in collaboration with an external organisation

10	Does this organisation have its own ethics approval system?	**YES**	☐	**NO**	☐

	If Yes, please attach a copy of any final approval (or interim approval) from the organisation (this may be a copy of an email if appropriate).

SECTION E: Details of Research Activity

1	Indicative title:	Investigation of the current situation of rural household furniture in East Hebei Province, China		
2	Proposed start date:	2023.04	Proposed end date:	2024.09

	Introduction to the Research (maximum 300 words per section) **Ensure that you write for a <u>Non-Specialist Audience</u> when outlining your response to the points below:** *Purpose of Research Activity* *Proposed Research Question* *Aims of Research Activity* *Objectives of Research Activity* Demonstrate, briefly, how **<u>Existing Research</u>** has informed the proposed activity and explain *What the research activity will add to the body of knowledge* *How it addresses an area of importance.*
3	**Purpose of Research Activity** With the trend of new rural construction, the living standards of Chinese rural areas continue to improve, and the demand for furniture from Chinese rural residents increases at a rate of 30% per year (Cui et al., 2008). However, for a long time, the Chinese furniture market has attached importance to cities and despised the countryside (Yu, 2014). Therefore, in this project, I will use the method of anthropological field investigation to study the current situation of rural household furniture in East Hebei Province (as known as 'Jidong'). The focus is on solving the problem of mismatch between rural household furniture and usage needs. This project will compile information on the current status of rural household furniture in Jidong, which has reference value for furniture designers to understand the needs of rural villagers. Secondly, the Jidong region has experienced severe earthquakes, and many paper materials have been destroyed. Therefore, this research aims to fill in some of the data gaps on rural furniture in Jidong. Finally, according to the literature, scholars who study regional rural furniture in China have not yet mastered a systematic theoretical research framework (Peng, 2020). Therefore, based on the field investigation method, I hope to construct a research framework for Chinese rural household furniture, which can be used as a reference for other scholars. **Reference list:** Cui, X. H. et al. (2008) 'The Development Status and Prospects of my country's Rural Furniture', *Forest products industry*, (01), pp. 16-19.DOI:10.19531/j.issn1001-5299.2008.01.004. Peng, A. M. (2020). Study on the architectural characteristics of traditional dwellings in the Jidong region, *Beijing University of Architecture*, Available at: https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202002&filename=1020633279.nh Yu, X. (2014) 'Is environment "a city thing" in China? Rural–urban differences in environmental attitudes', *Journal of environmental psychology*, 38, pp. 39–48. doi:10.1016/j.jenvp.2013.12.009. (this box should expand as you type)
4	**Research Question**

	At present, what is the demand for furniture of rural households in Jidong? Are there any solutions to the problems of rural furniture in Jidong? Does the furniture have any special usage? Is the traditional furniture in the villages of Jidong still preserved? How was that traditional furniture used? Is there any special way of using it? How to build a systematic theoretical research framework for the study of rural household furniture? (this box should expand as you type)
5	**Aims of Research Activity** This project aims to investigate Jidong area, conduct the on-the-spot investigation and data analysis, use the method of anthropological ethnographic field investigation to study the current situation of rural household furniture in Jidong, analyse and sort out the data to solve furniture problems and evaluate project outcomes. 1. Establishing a document on the current situation of rural household furniture in Jidong. 2. Providing solution ideas to the rural household furniture problems. 3. Supplementing the literature on Jidong rural furniture. 4. Building a framework that can be used to mainly focus on rural household furniture with regional characteristics. (this box should expand as you type)
6	**Objectives of Research Activity** Establishing a current status archive of rural household furniture in Jidong. This includes identifying the condition and issues of the furniture, analysing the behaviours and postures of villagers using furniture from an ergonomic perspective, and summarizing the current status and issues of rural household furniture in eastern Hebei province in this archive. Providing solution ideas for identified issues, considering factors such as price, form, functionality, materials, and sustainability, as well as evaluate and validate these solutions through consumer feedback. Collecting existing data on traditional furniture to supplement any rural furniture data that may have been lost due to natural disasters. Constructing a framework for studying rural household products with regional characteristics, providing reference for other rural researchers to adjust their research processes and methods based on local living habits and geographic conditions. (this box should expand as you type)
	Proposed methods (maximum 600 words) Provide a brief summary of all the methods that **may** be used in the research activity, making it clear what specific techniques may be used. If methods other than those listed in this section are deemed appropriate later, additional ethical approval for those methods will be needed. You do not need to justify the methods here, but should instead describe how you intend to collect the data necessary for you to complete your project.
7	This project will adopt multiple research methods and tools, including literature review, taxonomy method, field research methods, interviews, questionnaires, and quantitative data analysis. Among them, literature review and field research are the main methods for data collection in this project, and quantitative and qualitative research methods and tools will be used in the practice of field investigation.

Literature review

I will collect natural and cultural environment data in the Jidong area through various resources, such as books, internet searches, and visits to local libraries. In addition, I also need to summarize relevant papers on household furniture in the Jidong area.

Field research

First, I will describe two methods and tools used to collect data in fieldwork. The first is a qualitative approach. I will collect interview data on furniture issues using semi-structured interviews with participants by telephone, or face-to-face at home. The second is the quantitative method. I will collect furniture data (furniture size, space size, etc.) by taking photos, so as to obtain more traditional furniture information and improve the archives of Jidong rural family furniture.

Second, the project requires five field investigations for data collection. The data collection time will be from October 2023 to March 2024.

Before conducting data collection, participants will be recruited and their signed consent forms will be obtained prior to their participation. All participants in this project only include adults, excluding any vulnerable groups and children.

a. Round 1:

With the help of a local guide who knows the village well enough about the target village's ethnography, geography, cultural characteristics, etc. I will have a basic understanding of the population composition, natural geographical environment, and lifestyle of the research village through observation.

b. Round 2:

I will collect photos of 60 households' furniture in the village using my phone and record them (data protection see SECTION J). I will categorize the household furniture photos using taxonomy methods of furniture (taxonomy methods of furniture: material, function, style, space, price, manufacturing process, applicable objects, etc.).

c. Round 3:

I will randomly interview 10 families from Round 2, record the problems they have when using family furniture in their daily life, and analyse and sort out the superficial problems existing in the current furniture.

d. Round 4:

Using the methods of in-depth interviews and participatory observation, I will choose another 10 households in the research villages. I will live in the home of village guide, record the ways these 10 families use furniture in folklore activities, daily interactions, and family production, and summarize the deep-seated problems existing in current home furniture.

e. Round 5:

200 responses to the questionnaire of furniture preference to summarize villagers' preference standards for furniture.

Example questions for interviews

	1. What problems have you encountered when using home furniture? The most prominent problem? In what aspects? 2. What do you do during the Chinese New Year when you are at home? 3. How you use the living room? 4. What do you do when you are not busy? (this box should expand as you type)
	Location of research activity Identify all locations where research activity will take place.
8	The study will be conducted in Luannan County, Tangshan City, Hebei Province, China. The villages will be studied in the field are Fangpao Village, Qianmadi Village, Shangcaoying Village, and Dongbahu Village. (this box should expand as you type)
	Research activity outside of the UK If research activity will take place overseas, you are responsible for ensuring that local ethical considerations are complied with and that the relevant permissions are sought. Specify any local guidelines (e.g. from local professional associations/learned societies/universities) that exist and whether these involve any ethical stipulations beyond those usual in the UK (provide details of any licenses or permissions required). Also specify whether there are any specific ethical issues raised by the local context in which the research activity is taking place, for example, particular cultural and/or legal sensitivities or vulnerabilities of participants. If you live in the country where you will do the research then please state this.
9	The relevant legal and ethical codes in the areas I research do not go beyond any code of ethics normally prescribed in the UK. There are no specific ethical concerns in the local environment in which the research activities take place. *(this box should expand as you type)*

10	Use of documentation not in the public domain: Are any documents **NOT** publicly available?	**NO**	☒
		YES	☐
11	If Yes, please provide details here of how you will gain access to specific documentation that is not in the public domain and that this is in accordance with the current data protection law of the country in question and that of England and Wales. *(this box should expand as you type)*		

	Does your research relate to one or more of the seven aims of the Well-being of Future Generations (Wales) Act 2015?	**YES**	**NO**
12	A prosperous Wales	☐	☒
13	A resilient Wales	☐	☒
14	A healthier Wales	☐	☒
15	A more equal Wales	☐	☒
16	A Wales of cohesive communities	☐	☒
17	A Wales of vibrant culture and thriving Welsh language	☐	☒

18	A globally responsible Wales	☐	☒
19	If YES to any of the above, please give details:		
	(this box should expand as you type)		

SECTION F: Scope of Research Activity

	Will the research activity include:	**YES**	**NO**
1	Use of a questionnaire or similar research instrument?	☒	☐
2	Use of interviews?	☒	☐
3	Use of focus groups?	☒	☐
4	Use of participant diaries?	☐	☒
5	Use of video or audio recording?	☒	☐
6	Use of computer-generated log files?	☐	☒
7	Participant observation with their knowledge?	☒	☐
8	Participant observation without their knowledge?	☐	☒
9	Access to personal or confidential information without the participants' specific consent?	☐	☒
10	Administration of any questions, test stimuli, presentation that may be experienced as physically, mentally or emotionally harmful / offensive?	☐	☒
11	Performance of any acts which may cause embarrassment or affect self-esteem?	☐	☒
12	Investigation of participants involved in illegal activities?	☐	☒
13	Use of procedures that involve deception?	☐	☒
14	Administration of any substance, agent or placebo?	☐	☒
15	Working with live vertebrate animals?	☐	☒
16	Procedures that may have a negative impact on the environment?	☐	☒
17	Other primary data collection methods. Please indicate the type of data collection method(s) below.	☐	☒
	Details of any other primary data collection method: (this box should expand as you type)		

If NO to every question, then the research activity is (ethically) low risk and **may** be exempt from **some** of the following sections (please refer to Guidance Notes).

If YES to any question, then no research activity should be undertaken until full ethical approval has been obtained.

SECTION G: Intended Participants

If there are no participants then do not complete this section, but go directly to section H.

	Who are the intended participants:	**YES**	**NO**
1	Students or staff at the University?	☐	☒
2	Adults (over the age of 18 and competent to give consent)?	☒	☐

3	Vulnerable adults?	☐	☒
4	Children and Young People under the age of 18? (Consent from Parent, Carer or Guardian will be required)	☐	☒
5	Prisoners?	☐	☒
6	Young offenders?	☐	☒
7	Those who could be considered to have a particularly dependent relationship with the investigator or a gatekeeper?	☐	☒
8	People engaged in illegal activities?	☐	☒
9	Others. Please indicate the participants below, and specifically any group who may be unable to give consent.	☐	☒
	Details of any other participant groups: (this box should expand as you type)		

	Participant numbers and source Provide an estimate of the expected number of participants. How will you identify participants and how will they be recruited?	
10	How many participants are expected?	Round 1: I will mainly understand the general environment of the village. Round 2: 60 families are to be visited. (Only photos of home furniture will be collected, no participant interviews) Round 3: 10 family masters will be interviewed. Round 4: In-depth interviews with 10 family masters. Round 5: 200 villagers to fill in the questionnaires. *(this box should expand as you type)*
11	Who will the participants be?	**a. Key criteria for participants: (must be met)** This study will select residents whose household registration is in rural areas and who have lived in local rural areas for a long time. Residents who have rural ID cards but have lived in cities for a long time have been integrated into urban life and maybe the control group, but will not be the focus of this study. All participants in this project will only include adults, excluding any vulnerable groups and children. Participants will primarily be the male and/or female adult householders of the family. **b. Special family standards:** Families holding folk activities (folk activities include weddings, funerals, birthdays, New Years, etc.) Households engaged in home production (home production is the main source of income, home shops, home restaurants, etc.) *(this box should expand as you type)*
12	How will you identify the participants?	Eligible participants will be identified using a purposeful selection method. Recruitment will be evenly distributed from the study area. **a. Participants for Round 2**

		Purposeful selection method: I will approach the family who are willing to participate through the advice of local guide, and use selective sampling to vary the family features (such as number of people, number of bedrooms, location, etc.). 60 households meeting the participation criteria will be selected from the target research villages to collect rural household furniture data. **b. Participants for Round 3** In-depth interviews will be conducted with 10 families (the male and/or female adult) selected from among 60 families from Round 2. Indicate by filling out a short form whether they would like the researcher to take an in-depth look at their home life, which includes accepting the researcher into the home, recording videos, taking photos, etc. **c. Participants for Round 4** This recruitment will be selected based on particular family criteria (Special family standards). In the four research villages, as long as there are families who hold folk activities at home and farmers who produce at home, they can participate. Choose 5 families for each situation. **d. Participants for Round 5** Participants with 200 responses of furniture preference questionnaire need to meet the requirements of a. Key criteria for participants in item 11 of SECTION G. No other family member information will be collected without the consent of the participant. No information will be retained about families that refuse to participate. *(this box should expand as you type)*

	Information for participants:	**YES**	**NO**	**N/A**
13	Will you describe the main research procedures to participants in advance, so that they are informed about what to expect?	☒	☐	☐
14	Will you tell participants that their participation is voluntary?	☒	☐	☐
15	Will you obtain written consent for participation?	☒	☐	☐
16	Will you explain to participants that refusal to participate in the research will not affect their treatment or education (if relevant)?	☒	☐	☐
17	If the research is observational, will you ask participants for their consent to being observed?	☒	☐	☐
18	Will you tell participants that they may withdraw from the research at any time and for any reason?	☒	☐	☐
19	With questionnaires, will you give participants the option of omitting questions they do not want to answer?	☒	☐	☐

20	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	☒	☐	☐
21	Will you debrief participants at the end of their participation, in a way appropriate to the type of research undertaken?	☒	☐	☐
22	If NO to any of above questions, please give an explanation			
	(this box should expand as you type)			

	Information for participants:	**YES**	**NO**	**N/A**
24	Will participants be paid?	☐	☒	☐
25	Is specialist electrical or other equipment to be used with participants?	☐	☒	☐
26	Are there any financial or other interests to the investigator or University arising from this study?	☐	☒	☐
27	Will the research activity involve deliberately misleading participants in any way, or the partial or full concealment of the specific study aims?	☐	☒	☐
28	If YES to any question, please provide full details			
	(this box should expand as you type)			

SECTION H: Anticipated Risks

	Outline any anticipated risks that may adversely affect any of the participants, the researchers and/or the University, and the steps that will be taken to address them. If you have completed a full risk assessment (for example as required by a laboratory, or external research collaborator) you may append that to this form.		
1	**Full risk assessment completed and appended?**	**Yes**	☐
		No	☒
2	**Risks to participants** For example: sector-specific health & safety, emotional distress, financial disclosure, physical harm, transfer of personal data, sensitive organisational information		
	Risk to participants: Risk of privacy breach	*How you will mitigate the risk to participants:* Participants may be concerned that the personal information they disclose during the interview will be disclosed or misused. Solutions include: a. Explain the confidentiality of the interview to participants in advance and make sure they understand the confidentiality measures in place. b. Respect the privacy of participants and do not disclose personal information that they do not wish to share. c. Take appropriate security measures such as anonymization and encryption when recording and storing interview data.	

	Risk of misleading *(this box should expand as you type)*	The interviewer may inadvertently or intentionally mislead participants, resulting in biased or distorted information. Solutions include: a. The interviewer should remain neutral and objective and avoid implying specific answers in questions or responses. b. Provide clear instructions and explanations to ensure that participants fully understand the intent of the question and are able to express their views freely. c. Try to use open and neutral questions to promote independent thinking and free expression of participants. *(this box should expand as you type)*
3	If research activity may include sensitive, embarrassing or upsetting topics (e.g. sexual activity, drug use) or issues likely to disclose information requiring further action (e.g. criminal activity), give details of the procedures to deal with these issues, including any support/advice (e.g. helpline numbers) to be offered to participants. Note that where applicable, consent procedures should make it clear that if something potentially or actually illegal is discovered in the course of a project, it may need to be disclosed to the proper authorities	
	In my research, the above mentioned situations carry a very low risk of psychological harm. *(this box should expand as you type)*	
4	**Risks to the investigator** For example: personal health & safety, physical harm, emotional distress, risk of accusation of harm/impropriety, conflict of interest	
	Risk to the investigator: Personal safety risks Mental health risks	*How you will mitigate the risk to the investigator:* When conducting fieldwork alone, investigator may face personal safety risks such as theft, assault or accidents. Solutions include: a. Accompanied by trusted person or stay in touch with my families and regularly report my location and movements. b. Conduct a full safety assessment before the inspection, understand the safety situation of the destination, and take corresponding preventive measures, such as understanding the local safety situation and finding safe accommodation. c. Find a suitable travel companion or local guide for added personal safety. Working alone for long periods of time can be stressful and burdensome to the investigator's mental health. Solutions include: a. Set reasonable working hours and rest periods for myself to avoid overwork. b. Before conducting research, be prepared with strategies for coping with loneliness and stress, such as staying in touch with family

	(this box should expand as you type)	and friends, attending local social events, or seeking psychological support. *(this box should expand as you type)*
5	**University/institutional risks** For example: adverse publicity, financial loss, data protection	
	Risk to the University: *(this box should expand as you type)*	*How you will mitigate the risk to the University:* The University or Institutional risks are considered minimal. Data protection risks(Section J) are addressed in adherence with the University's Research Data Policy and UWTSD Group Data Protection Policy. This research will be conducted with the highest ethical standards of the University's Research Data Policy and UWTSD Group Data Protection Policy. *(this box should expand as you type)*
6	**Environmental risks** For example: accidental spillage of pollutants, damage to local ecosystems	
	Risk to the environment: Traffic and noise *(this box should expand as you type)*	*How you will mitigate the risk to environment:* Fieldworkers entering villages, driving car and conducting observations and data collection at different locations may increase local noise levels. This may cause a certain degree of disturbance to the life of the residents. Solutions include: a. Minimize the impact of traffic and noise on the village. b. Take reasonable transportation arrangements and choose less crowded time slots for work. *(this box should expand as you type)*

	Disclosure and Barring Service			
	If the research activity involves children or vulnerable adults, a Disclosure and Barring Service (DBS) certificate must be obtained before any contact with such participants.	**YES**	**NO**	**N/A**
7	Does your research require you to hold a current DBS Certificate?	☐	☒	☐
8	If YES, please give the certificate number. If the certificate number is not available please write "Pending"; in this case any ethical approval will be subject to providing the appropriate certificate number.			

SECTION I: Feedback, Consent and Confidentiality

1	**Feedback** What de-briefing and feedback will be provided to participants, how will this be done and when?
	The participants' privacy, right to know, and right to participate should be guaranteed when taking pictures and data presentation, and the consent form will be provided to them before the study,

	along with the information sheet. At the end of the program, participants will be invited to a presentation. *(this box should expand as you type)*
2	**Informed consent** Describe the arrangements to inform potential participants, before providing consent, of what is involved in participating. Describe the arrangements for participants to provide full consent before data collection begins. If gaining consent in this way is inappropriate, explain how consent will be obtained and recorded in accordance with prevailing data protection legislation.
	This research will be personal, confidential, and sensitive personal data as defined under the Data Protection Act 2018 (DPA). Informed consent will be required for this study to ensure that participants understand that data for the study will be obtained from interviews, questionnaires, and recordings, and then consent will be obtained for data storage and anonymized data sharing after the completion of this project. Information sheet will be provided to the potential participants to understand the research activities and their rights. The information sheet includes a detailed explanation of the purpose of the research, the procedures involved, the potential risks and benefits, confidentiality measures, voluntary participation, and the right to withdraw at any time without penalty. In addition, informed consent will be obtained from each participant before conducting any research procedures. If questionnaires are taken online, participants will be required to read the information sheet and provide their electronic consent by clicking on an "I agree" button before proceeding with the questionnaire. During the project research process, if there are any adjustments to the project plan, research content, research location, research cycle, etc., the researcher will promptly notify the participants and make corresponding adjustments. Second, during the course of the project, researchers share information with participants, analyse results, and ensure the rights of participants. *(this box should expand as you type)*
3	**Confidentiality / Anonymity** Set out how anonymity of participants and confidentiality will be ensured in any outputs. If anonymity is not being offered, explain why this is the case.
	All data collection and handling will comply with the standards set by UWTSD's Research Data Management Policy and the UK 2018 Data Protection Act and any information which leaves the university will have the name and associated information removed to ensure the confidentiality is maintained at all times. a. Data collection phase: Take an anonymous survey method: Use anonymous questionnaires to collect data, ensuring that participants' personally identifiable information is not compromised. Ensure data security: Take necessary security measures, such as encrypting data transmission, using secure storage devices with password, etc., to prevent unauthorized access and disclosure. b. Data processing and analysis phase: De-personal identifiable information: During data processing and analysis, ensure that any directly identifiable information such as name, address, etc. that can identify an individual is removed. Use an anonymous number or pseudonym in lieu of personally identifiable information. Data aggregation: Data is aggregated to avoid revealing specific information about individual participants. Ensure that analysis results cannot restore the identity of individual participants. c. Data presentation and reporting phase:

	Any personal information provided will be used for research purposes only. In research reports and presentations, avoid disclosing any information that can be traced back to individual participants. If it is intended to be published, for example in an academic presentation or paper, the faces and any personal identifiers in any video footage / images will be obscured so any participants cannot be recognised. Present research findings using overall statistics or summarized results. *(this box should expand as you type)*

SECTION J: Data Protection and Storage

	Does the research activity involve personal data (as defined by the General Data Protection Regulation 2016 "GDPR" and the Data Protection Act 2018 "DPA")?	**YES**	**NO**
1	***"Personal data"*** *means any information relating to an identified or identifiable natural person ('data subject'). An identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person. Any video or audio recordings of participants is considered to be personal data.*	☒	☐
	If YES, provide a description of the data and explain why this data needs to be collected:		
2	In order to better solve the current problem of using rural furniture, I need to collect statistics on the personal information of the participants during the data collection stage, such as age, gender, education background, work background, salary level, daily activities, and interests. Collecting and analysing this information important for understanding the participants' potential demand for furniture, ability to purchase furniture, etc. a. Age and gender Knowing the basic information of the interviewee can help me build better interaction and communication. In this way, more information can be learned about the use of household furniture from their perspective and context. b. Education background Understanding the educational background of the participants can provide their life and personal experiences, which may better help me understand the stories behind the furniture. c. Work background and salary level Understanding the homeowner's work background and salary level helps me more accurately assess their ability to purchase furniture. This understanding can fully consider the cost of furniture when designing country home furniture. d. Daily activities and interests Understanding the participants' daily activities, hobbies and social activities helps me understand their lifestyle and social relationships. Collecting this information helps me analyse their furniture preferences in my projects. Measures to protect participants: Any personal information provided by participants will be used for evaluation purposes only. I will obscure participants' faces and any personal identifiers in any video footage/images if it is intended to be published, for example in an academic presentation or paper, so that participants cannot be recognised. All data collection and handling will comply with the standards set by UWTSD's Research Data Management Policy and the UK 2018 Data Protection Act and General Data Protection Regulation 2016, and any information which leaves the university will have the		

	participants' name and associated information removed to ensure participants confidentiality is maintained at all times. Individual participant research data will be anonymous and given a research code, known only to me, and will be stored in a locked cabinet, within locked my room, accessed only by me. Electronic data e.g. video/audio files, will be stored on a password-protected computer, known only by me, within a locked cabinet. Manual files will be stored in a locked cabinet, within locked my room, accessed only by me. *(this box should expand as you type)*

	Does it involve special category data (as defined by the GDPR)?	**YES**	**NO**
3	***"Special category data"*** *means sensitive personal data consisting of information as to the data subjects' –* *(a) racial or ethnic origin,* *(b) political opinions,* *(c) religious beliefs or other beliefs of a similar nature,* *(d) membership of a trade union (within the meaning of the Trade Union and Labour Relations (Consolidation) Act 1992),* *(e) physical or mental health or condition,* *(f) sexual life,* *(g) genetics,* *(h) biometric data (as used for ID purposes),*	☐	☒
	If YES, provide a description of the special category data and explain why this data needs to be collected:		
4	*(this box should expand as you type)*		

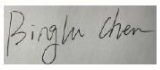
	Will data from the research activity (collected data, drafts of the thesis, or materials for publication) be stored in any of the following ways?	**YES**	**NO**
5	Manual files (i.e. in paper form)?	☒	☐
6	University computers?	☐	☒
7	Private company computers?	☐	☒
8	Home or other personal computers?	☒	☐
9	Laptop computers/ CDs/ Portable disk-drives/ memory sticks?	☒	☐
10	"Cloud" storage or websites?	☐	☒
11	Other – specify:	☐	☒
12	For all stored data, explain the measures in place to ensure the security of the data collected, data confidentiality, including details of backup procedures, password protection, encryption, anonymisation and pseudonymisation:		
	a. All information collected will be kept confidential and anonymous, per DPA 2018 and GDPR 2016. b. All collected data will be backed up to hard drives and encrypted USB storage devices. During data collection, transcription, and analysis, backups will be made to the USB storage device monthly. All digital resources will be encrypted and password protected and data will be pseudo-anonymized/ anonymized as early as possible. c. The data temporarily saved in the laptop will be transferred to hard drives on time every month, and any data transferred will always be completely anonymous to ensure that no data will be lost and leaked.		

	d. Manual files will be stored in a locked cabinet, within locked my room, accessed only by me. *(this box should expand as you type)*

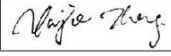
	Data Protection		
	Will the research activity involve any of the following activities:	**YES**	**NO**
13	Electronic transfer of data in any form?	☒	☐
14	Sharing of data with others at the University outside of the immediate research team?	☐	☒
15	Sharing of data with other organisations?	☐	☒
16	Export of data outside the UK or importing of data from outside the UK?	☒	☐
17	Use of personal addresses, postcodes, faxes, emails or telephone numbers?	☒	☐
18	Publication of data that might allow identification of individuals?	☐	☒
19	Use of data management system?	☐	☒
20	Data archiving?	☐	☒
21	If YES to any question, please provide full details, explaining how this will be conducted in accordance with the GDPR and Data Protection Act (2018) (and any international equivalents, where appropriate):		
	13. I will use a mobile phone or a camera to collect data, and then back up the data collected every day to my personal computer, USB disk and hard disk. All the devices are secured with password. The online survey will be on trustworthy platform (like Qualtrics) that protects data and privacy. 16. My research location is in China. 17. When conducting interviews, I need to make an appointment to contact participants with a Chinese mobile number. *(this box should expand as you type)*		
22	List all who will have access to the data generated by the research activity:		
	Researcher--PhD supervisory team (anonymised data only) *(this box should expand as you type)*		
23	List who will have control of, and act as custodian(s) for, data generated by the research activity:		
	Researcher—CHEN BINGLU *(this box should expand as you type)*		
24	Give details of data storage arrangements, including security measures in place to protect the data, where data will be stored, how long for, and in what form. Will data be archived – if so how and if not why not.		
	Security measures for data storage include: a.Electronic data e.g. video/audio files, will be stored on a password-protected computer, known only by me, within a locked cabinet (Adopt home firewall and network security measures to protect storage system from network attack and malicious intrusion.)		

	b. Manual files will be stored in a locked cabinet in my room, within locked my room, accessed only by me. c.Regularly backup data. Backup data should be stored in different locations, such as my hard disk, my USB, and my laptop. d. All the data of the participants will be encoded and stored in a computer with a password, and only I can access it. Data will be stored by me for a possible 3-year retention period, in the form of photographs, documents, as required for research purposes. *(this box should expand as you type)*		
25	Please indicate if your data will be stored in the UWTSD Research Data Repository (see https://researchdata.uwtsd.ac.uk/). If so please explain. (*Most relevant to academic staff)*		
	All data held through the UWTSD Research data repository will be stored and maintained indefinitely.Under the UWTSD Research Data Policy (2016), the UWTSD Research Data Repository will be responsible for long-term governance. This responsibility is reserved by the UWTSD Research Data Repository Director. *(this box should expand as you type)*		
26	Confirm that you have read the UWTSD guidance on data management (see https://www.uwtsd.ac.uk/library/research-data-management/)	**YES**	☒
27	Confirm that you are aware that you need to keep all data until after your research has completed or the end of your funding	**YES**	☒

SECTION K: Declaration

	The information which I have provided is correct and complete to the best of my knowledge. I have attempted to identify any risks and issues related to the research activity and acknowledge my obligations and the rights of the participants. In submitting this application I hereby confirm that I undertake to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice which is published on the website: https://www.uwtsd.ac.uk/research/research-ethics/		
1	**Signature of applicant:**		**Date:** 12/06/2023

For STUDENT Submissions:

2	Director of Studies/Supervisor:	Yajie Zhang	**Date:** 25/05/2023
3	Signature:		

For STAFF Submissions:

4	Academic Director/ Assistant Dean:		**Date:**
5	Signature:		

Checklist: Please complete the checklist below to ensure that you have completed the form according to the guidelines and attached any required documentation:

☒	I have read the guidance notes supplied before completing the form.
☒	I have completed **ALL RELEVANT** sections of the form in full.
☒	I confirm that the research activity has received approval in principle
☐	I have attached a copy of final/interim approval from external organisation (**where appropriate**)
☐	I have attached a full risk assessment (where appropriate) *ONLY TICK IF YOU HAVE **ATTACHED A FULL RISK ASSESSMENT***
☒	I understand that it is my responsibility to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice.
☒	I understand that before commencing data collection all documents aimed at respondents (including information sheets, consent forms, questionnaires, interview schedules etc.) must be confirmed by the DoS/Supervisor, module tutor or Academic Director.

RESEARCH STUDENTS AND STAFF ONLY
All communications relating to this application during its processing must be in writing and emailed to pgresearch@uwtsd.ac.uk , with the title 'Ethical Approval' followed by your name.
You will be informed of the outcome of your claim by email; therefore it is important that you check your University and personal email accounts regularly.

STUDENTS ON UNDERGRADUATE OR TAUGHT MASTERS PROGRAMMES should submit this form (and receive the outcome) via systems explained to you by the supervisor/module leader.

This form is available electronically from the Academic Office web pages:
https://www.uwtsd.ac.uk/academic-office/appendices-and-forms/

Appendix 3: Questionnaire

Questionnaire on Household Furniture Preferences in the Jidong Rural Area

I am currently a current PhD student at Trinity Saint David University in Wales. I am researching the preferences of Jidong villagers for household furniture. Please tick the appropriate options according to your thoughts and reality, this questionnaire will take about 3-5 minutes, is completely anonymous, does not disclose personal information, and is for academic research purposes only. Your help would be greatly appreciated!

Time: _____ **Date:** _____

1. Your gender:

O Male O Female

2. Your age:

O Under 20 years old O 20-40 years old O 40-60 years old O Over 60 years old

3. Your height:

○Below 150cm ○150-175cm ○175cm or above

4. Your family members:

○1 person ○2-3 persons ○3-5 persons ○More than 5 persons ○Other

5. What is your family's main source of income? (multiple choices)

O Farming O Work near home O Home-based production O Other

6. Your family's total monthly income:

O Less than 5000 O 5000—10000 O 10000—15000 O15000—22000 O Not convenient to discuss

7. Where do you spend the most time in a day?

O Bedroom O Living room (hall) O Kitchen O Bathroom O Side room

8. Is your items of furniture easy to use at present?

	Very inconvenient	Somewhat inconvenient	Neutral	Somewhat convenient	Very convenient
Bedroom (Inner room)	○	○	○	○	○
Living room (Hall)	○	○	○	○	○
Kitchen	○	○	○	○	○

9. Do you agree with the following views ?

	Strongly disagree	Disagree	General	Agree	Strongly agree
The furniture itself is of poor quality	○	○	○	○	○
Don't know how to use furniture	○	○	○	○	○
Furniture design is not reasonable, it is difficult to use	○	○	○	○	○
Furniture can be insufficient during festivals	○	○	○	○	○
Normally, there are unused furniture in the house	○	○	○	○	○

10. Under what circumstances would you buy furniture? (multiple choices)

O When building a new house or renovating a house

O When the existing furniture is outdated

O When the existing furniture is damaged

O When furniture is on sale

O When you have a child or get married

O Other_____

11 Which of the following intrinsic factors do you consider most important when purchasing furniture? [Ranking question, please fill in the numbers in the middle bracket in order]

[ ] Material: Durability and workmanship of the materials used in the furniture

[ ] Functionality: Whether the function of the furniture meets your actual needs.

[ ] Comfort

[ ] Design and style: the appearance and overall style of the furniture

[ ] Size: Whether the size of the furniture is suitable for your space or not.

[ ] Environmental friendliness

12. Which of the following external factors do you think is the most important when buying furniture? [Ranking question, please fill in the numbers in the middle bracket in order]

[ ] Price

[ ] Brand

[ ] After-sales service

[ ] Purchase channel (e.g. physical shop or online platform)

13. Which of the following styles of furniture do you prefer?



O Nordic style



O American style



O New Chinese style

O No special preference

O other_____

14. Which type of bed do you prefer?

O Traditional bed-"Kang" O modern wood bed O metal bed O other_____

15. What type of bedroom seating furniture do you prefer?

O Sofa O Wooden seat O Square wooden stool O Iron ring stool O Plastic stool O Other_____

16. What type of wardrobe do you prefer?



O Traditional wardrobe



O Modern sliding door wardrobe



O Open wardrobe (without door, with hanging rod)



O The combination of TV cupboards and wardrobes

O Other_____

17. What type of sofa do you prefer?

O Fabric sofa O leather sofa O wooden sofa O other_____

18. What type of dining table do you prefer?

O Wooden dining table O Foldable table O Kang table O Tea table O Other____

19. What kind of sitting furniture do you prefer?

O Plastic stool O Iron ring stool O Wooden benches (Square wooden stool) O Other _____

20. What type of shoe cupboard do you prefer?

O Closed shoe cupboard O Open plastic shoe rack O Shoe box O other_____

21. What type of cupboard do you prefer?



O Old cupboard



O New cupboard



O One-piece multi-function cupboard

O Other_____

Thank you very much for taking your valuable time to participate in this questionnaire.

Appendix 4: Participant Information Sheet

Participant Information Sheet

You are invited to participate in a research study on the current state of rural household furniture in the Jidong region. Before you decide, it is important to understand the purpose of this study and what benefits it may offer you. Participation is entirely voluntary, and you may choose not to take part. Please read the following information carefully to help you make an informed decision. If you have any questions or require further clarification, feel free to ask.

Title of the Study:
An Investigation of Current Rural Household Furniture in East Hebei (Jidong) Province, China

1. What is the purpose of this study?
This study aims to examine the current state of rural household furniture in Jidong, focusing on the mismatch between furniture and user needs. Additionally, it seeks to document certain types of traditional furniture, filling gaps in existing data on rural furniture in this region.

2. Why have I been invited?
As a permanent resident of the village under study, your participation would be invaluable to this research.

3. Do I have to take part?
Participation is entirely voluntary. You are provided with this information sheet for reference. If you agree to participate, you will be given a consent form to sign. You may withdraw from the study at any time without providing a reason.

4. What will happen if I take part?
I will visit and photograph your home and ask you some questions about your furniture. (You may stop the visit at any time.)

I will conduct a face-to-face interview with you, recording the conversation via audio or video. You may choose which questions to answer, and you may stop the interview or the recording at any time.

You will be asked to complete a questionnaire about furniture, with my assistance if needed. (You may also choose not to complete the questionnaire.)

5. Will there be any costs or payments?
There are no costs associated with participation in this study.

6. Are there any disadvantages or risks in taking part?
This study poses minimal risk. If at any point the study inconveniences you or your family, I will immediately halt the research.

7. What are the potential benefits of taking part?
While there may be no direct benefits to you, the information obtained from this study will contribute to a better academic understanding of furniture use in Jidong and may inform solutions to existing furniture-

related issues.

8. What if I have questions or concerns?
If you have any questions about this study, please contact the lead researcher (Name, Email). If you are not satisfied with the response and wish to file a formal complaint, you may do so through the university's complaint procedure, which can be accessed at: https://www.uwtsd.ac.uk/governance/externalcomplaints. If you decide to withdraw from the study, you may do so at any time.

9. Will my participation be confidential?
Any personal information you provide will be used solely for the researcher's thesis. If the research is published (e.g., in academic reports or papers), your face and any identifying information in video recordings or images will be blurred to protect your identity.

All data collection and processing will comply with the University of Wales Trinity Saint David's research data management policy. Any information leaving the university will be anonymized to ensure confidentiality.

Your data will be stored using a unique research code known only to the researcher. Physical data will be kept in a locked cabinet in a secure office, accessible only to the researcher. Electronic data (such as video/audio files) will be stored on a password-protected computer in a locked office, accessible only to the researcher.

10. What happens if I decide to withdraw?
If you choose to withdraw from the study, all data collected from you will be permanently deleted.

11. How will the study results be used?
The research findings will be used from November 1, 2023, to November 1, 2028. The university may choose to publish the research findings, but as previously stated, your identity will remain confidential unless you provide explicit consent for disclosure.

Researcher: Chen Binglu
Date: October 28, 2023
Contact Information: 15136253340

Participant:
Date:
Contact Information:

Appendix 5: Consent Form

Consent Form

Title of Project: An Investigation of Current Rural Household Furniture in East Hebei (Jidong) Province, China

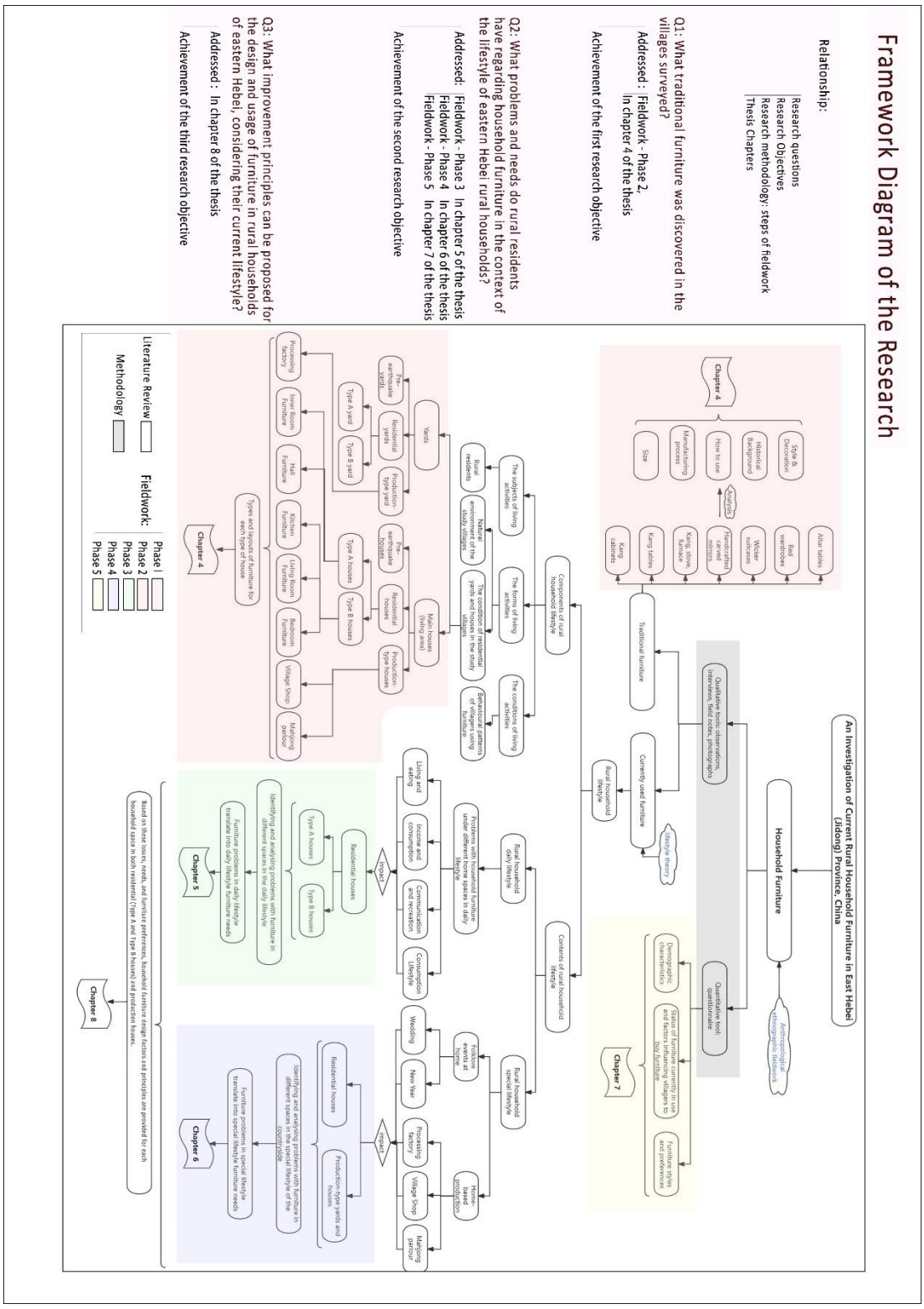
Name of Researcher: Chen Binglu

Please initial box

I confirm that I have read the ***Participant Information Sheet*** **dated:** I have had the opportunity to ask questions about the study and have received satisfactory answers.	☐
I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my legal rights being affected.	☐
I understand and agree to the use of audio/video recording/ field notes as part of the study, with the possible use of verbatim quotation or use of photographs as a means of communicating the evaluation findings.	☐
I understand that data collected during the evaluation may be looked at by university academics supporting this project, where it is relevant to my taking part in this research. I give permission for these individuals to have access to this data.	☐
I understand that any personal data collected about me will be treated with full confidentiality and that, if published, it will not be identifiable as mine. I understand that it may also be used to support other research in the future and may be shared anonymously with other researchers.	☐
I agree to take part in the above evaluation.	☐

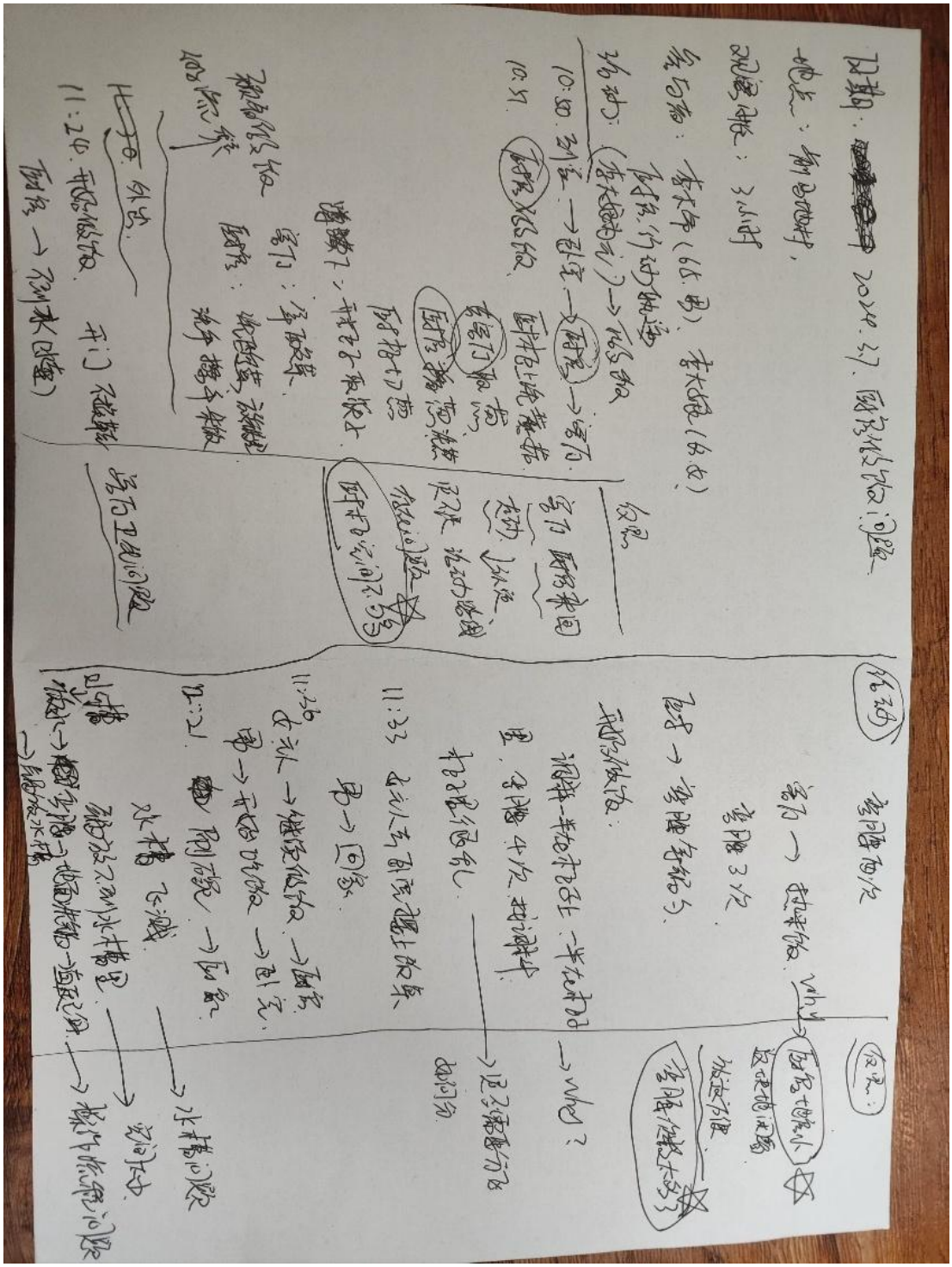
Name of Participant		**Date**		**Signature**	
Name of Researcher	Chen Binglu	**Date**	28,10,2023	**Signature**	

Appendix 6: Framework Diagram of the Research



Appendix 7: An example of field notes

Original field notes (Chinese version)



Updated version

Date: 03,07,2024. -----Kitchen cooking problems **Site/location:** Qianmadi Village

Length of Observation: 2 hours **Participants (list names):** Q92717

Activity (explain in detail):	**Reflection:**
Female Master's Action Track: Preparing to cook: 10:50-11:00 Arrived home, went into living room (didn't change shoes) to place ingredients, washed hands in kitchen, got mushrooms from living room, washed mushrooms on kitchen cupboard, got shallots from living room, sowed shallots in kitchen to wash and cut shallots, bent down to open cabinet to get chopsticks, went to living room to get side dishes, went back to kitchen to wash side dishes, rice in pot, went out.	**Pre-Cooking Preparation** During the ingredient preparation process, the female host frequently moved between the living room and the kitchen to retrieve various ingredients and utensils, indicating **an inefficient kitchen storage layout**. Some ingredients (e.g., mushrooms, shallots) were stored in the living room; while washing and preparation took place in the kitchen. This not only increased unnecessary walking distance but also posed potential hygiene concerns. Additionally, she had to b**end down to retrieve chopsticks from a low cupboard**, highlighting that the storage design did not adequately consider ergonomic factors, as frequently used items were stored in inconvenient locations.
Cooking: 11:24-11:36 arrived home, went into the living room (didn't change shoes), washed hands and drank water in the kitchen (stooped twice), steamed rice in the living room (stooped three times), stooped in the kitchen to get stir-frying utensils, half of the spices were on the cupboards, half were in the cupboards, stooped four times to look for the spices, the cupboards were very messy, the bedroom set up the cutlery.(11:33 Male host comes home, washes hands in kitchen, eats in bedroom.)	**Cooking Process** During cooking, the female host repeatedly **bent down to search for spices and cooking utensils**, indicating **poor organization of storage spaces**. The spices were stored in **a disorderly manner**, making them difficult to locate, which negatively affected cooking efficiency. Additionally, certain cooking tasks, such as **steaming rice in the living room** and **setting the dining table in the bedroom**, suggest that the kitchen space was inadequate to fully accommodate essential cooking and dining activities. This phenomenon of **kitchen function overflow** not only increased labor intensity but also reduced spatial efficiency.
Cleaning up after dinner: 12:21 Brushing dishes, sink too small to place, half of the cutlery put on the floor, water splashes from the sink, floor is dirty, cleaned cutlery is re-contaminated, frying pans are too big to be put in the sink, sink catches the water, bending down, put on the floor to clean the pans, straighten up, put in the sink to pour the water, repeat three times.	**Post-Meal Cleaning** During post-meal cleaning, the **sink was too small** to accommodate all the dishes, forcing the female host to **place some items on the floor**, which not only compromised hygiene but also risked **cross-contamination of cleaned dishes**. Furthermore, large frying pans could not fit entirely in the sink, requiring her to **bend down multiple times to place them on the floor for cleaning, lift them back up, and drain water repeatedly**. This process increased **physical strain** and caused water to accumulate on the floor, making the kitchen environment slippery and **posing safety hazards**.

Design Recommendations

1. **Optimizing Storage Layout**: Establish a systematic storage arrangement for ingredients and utensils to minimize unnecessary movement. Introduce drawers or overhead cabinets to reduce the need for frequent bending.
2. **Enhancing Kitchen Workflow**: Integrate cooking functions within a well-organized workspace to reduce movement between the kitchen and living areas. Consider a multifunctional preparation counter.
3. **Improving Washing Facilities**: Enlarge the sink to accommodate larger cookware, prevent dishware from being placed on the floor, and adjust the height to reduce strain from bending.
4. **Enhancing Safety**: Implement non-slip flooring materials and improve drainage systems to reduce the risk of kitchen slips and water accumulation.

Key Focus Areas for the Next Household Observation (Next Household)

1. **Usage Patterns**: Examine the division of household tasks and observe the engagement of elderly and children in kitchen activities.
2. **Furniture Ergonomics**: Assess whether cabinets and seating arrangements align with ergonomic principles and explore potential adjustments.
3. **Ventilation and Lighting**: Evaluate the adequacy of natural lighting, ventilation, and the efficiency of smoke extraction.
4. **User-Led Modifications**: Observe any self-initiated adaptations to kitchen facilities and assess their effectiveness in improving convenience.